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GSBPP faculty perceptions of synchronous Distance Learning technologies

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THESIS

GSBPP FACULTY PERCEPTIONS OF SYNCHRONOUS DISTANCE LEARNING TECHNOLOGIES

by

Inanc Cahit Guremen

December 2008

Thesis Advisor: James Suchan
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13. ABSTRACT (maximum 200 words)

Distance Learning (DL) is a formal learning activity that occurs when students and instructors are separated by both time and geographical distance. Since the learning and teaching occur in different places, DL requires special course design and instructional techniques, as well as special communication techniques and organizational-administrative arrangements. DL programs have various delivery methods using either asynchronous (email, Web, videotape) or synchronous (Video teleconferencing, Elluminate) communications technologies. There are several potential benefits of DL, such as reaching students who do not have easy access to education, providing flexibility in class meeting times, mass delivery of education, improving the quality of learning as compared to traditional classroom-based instruction, and ultimately preparing students for a knowledge-based society. However, limitations and concerns are also evident in this new learning environment. Many challenges associated with DL focus on faculty issues and concerns. The aim of this project is to review the perceived difficulties of DL teaching from the perspective of faculty who teach DL programs in the Graduate School of Business & Public Policy (GSBPP) at Naval Postgraduate School (NPS), and then to recommend sound solutions in order to ensure program success.

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GSBPP FACULTY PERCEPTIONS OF SYNCHRONOUS DISTANCE LEARNING TECHNOLOGIES

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requirements for the degree of

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ABSTRACT

Distance Learning (DL) is a formal learning activity that occurs when students and instructors are separated by either time or geographical distance. Since the learning and teaching occur in different places, DL requires special course design and instructional techniques, as well as special communication techniques and organizational-administrative arrangements. DL programs have various delivery methods using either asynchronous (email, Web, videotape) or synchronous (Video teleconferencing, Elluminate) communications technologies. There are several potential benefits of DL, such as reaching students who do not have easy access to education, providing flexibility in class meeting times, mass delivery of education, improving the quality of learning as compared to traditional classroom-based instruction, and ultimately preparing students for a knowledge-based society. However, limitations and concerns are also evident in this new learning environment. Many challenges associated with DL focus on faculty issues and concerns. The aim of this project is to review the perceived difficulties of DL teaching from the perspective of faculty who teach DL programs in the Graduate School of Business & Public Policy (GSBPP) at Naval Postgraduate School (NPS), and then to recommend sound solutions in order to ensure program success.

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ACKNOWLEDGMENTS

I would like to give a special thanks to my wife, Emel, who has supported and assisted me through my six quarters at Naval Postgraduate School (NPS). I would also like to thank my son, Cagatay, who joined our family in my last quarter, for his patience while his father is studying. A special thanks goes to my family for their constant support.

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I. INTRODUCTION

A. PURPOSE OF THE STUDY

The intent of this study is to review the perceived difficulties of synchronous Distance Learning (DL) teaching from the perspective of faculty who teach DL programs in the Graduate School of Business & Public Policy (GSBPP) at Naval Postgraduate School (NPS). In addition, this study recommends sound solutions to problems these faculty encounter, to ensure program success.

The study started with an extensive literature review of synchronous DL instructional methods, using the DL systems model outlined in Figure 1.

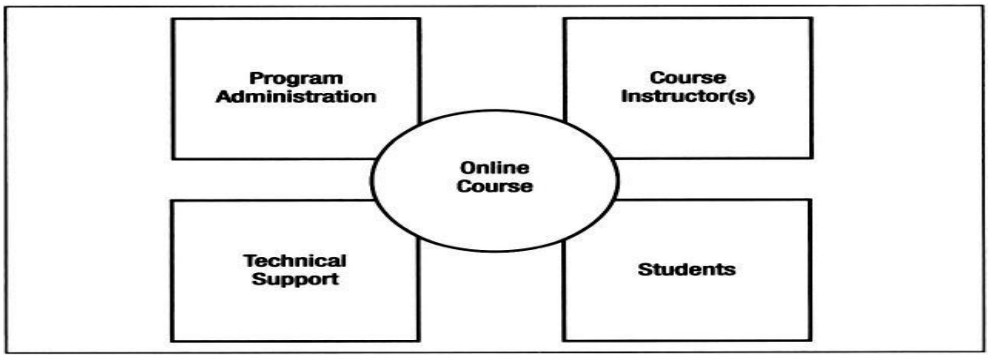

Figure 1. The four key areas for successful synchronous communication within an online learning program (From: Groen, J., Tworek, J., & Soos-Gonczol, M., 2008)

The literature review was conducted to identify challenges that faculty perceive during their synchronous DL instruction and probable solutions provided by the contribution and support of each key area outlined in the systems model.

Only the recently published literature was selected for the DL literature review because of rapid changes in technology and the learning environment. Universities redefine their learning environment because of the growing demand for new knowledge in a global economy, and the existence of competitors ready to support institutions with their powerful technologies in the education market (Onay, 2002).

The data required to determine GSBPP faculty perceptions were collected through semi-structured, open-ended interviews. GSBPP faculty who use synchronous DL technologies such as video teleconferencing (VTC) and/or Elluminate as a delivery method of instruction were interviewed so that they could provide detailed descriptions of their perceptions and attitudes about teaching in a synchronous DL environment using these two technologies.

Finally, this project should help other institutions, particularly in Turkey, understand the dynamics of synchronous DL technologies to redefine their learning environment for effective synchronous DL instruction.

B. BACKGROUND INFORMATION ABOUT DISTANCE LEARNING TECHNOLOGIES

Various forms of technology are used in the delivery of distance education. Synchronous solutions for instruction are becoming more and more popular due to the accelerating growth in communication and information technologies and the increasing bandwidth of Internet access (Kwok, 2007).

Learning through traditional methods, like face-to-face, in-class teaching, generally required only the instructor, textbook material and any additional support materials the instructor was able to bring to class. Today, with the developing technology of computers and Internet-based education and training, all that has changed. The rapid improvements in information and communication technologies have opened the door to a wide variety of teaching and learning instructional modes which, in turn, has led to new teaching and learning environments not possible even a few years ago.

According to Appana (2008), some educators criticize traditional or face-to-face instructional environments for preventing active learning, ignoring individual differences and needs of the learners, and not paying attention to problem solving, critical thinking, or other higher order thinking (Appana, 2008). Moreover, Taylor (2002) claims that DL is excellent for most academic courses and training programs that require cognitive learning, where “the student uses memorization, learns concepts, uses analytical skills, evaluates data and uses this knowledge to arrive at solutions.” According to the DL

literature, the quality of the instructional time spent in the DL classroom is likely to be comparable to or even better than time spent in a traditional classroom (Moreland & Saleh, 2007; Conciecao-Runlee, 2001).

Distance learning programs range from independent study to more formal coursework offered by various asynchronous (email, Web) and synchronous (video-teleconferencing, Elluminate) technologies (Berge, 2002). These programs may also include "blended learning" approaches that combine various modes of DL with traditional face-to-face instruction to establish and consolidate a sense of community (Wiesenberg & Stacey, 2005).

Online instruction is a form of DL delivered over the Internet. Studies have shown that online instruction offers a major breakthrough in teaching and learning owing to the fact that it facilitates the exchange of information and expertise while providing unique opportunities, such as preparing students for a knowledge-based society and engaging them in a collaborative learning environment spanning the globe, for all types of learners in distant or disadvantaged locations (Appana, 2008).

There are numerous potential benefits of DL, but according to researchers the main benefits include increased student access, economic benefits such as reduction in capital investment (e.g., fewer buildings and parking lots may be required if more students learn off campus), removal of time lag between availability of updated course material and student access to those materials, improved quality of learning, flexibility in class meeting times, mass delivery of instruction, increased student interaction and satisfaction, growth in faculty learning, and "rich" feedback and evaluation (Appana, 2008; Harting & Erthal, 2005).

In an *International Journal on Learning* article, Groen, Tworek, & Soos-Gonczol (2008) defined four key areas that are integral to running an effective online graduate program, in general. The four key areas are represented in Figure 1. First, program administration is important as it provides the foundation, direction, and structural scaffolding for the distance learning program. Second, technical support helps the program work smoothly and maintains the technological scaffolding by solving

technological problems and recommending and installing updates to the technologies. Third, the instructors build the course content scaffolding and the communication protocols to create a safe learning environment in which the students are able to find opportunities to learn and opportunities to express themselves comfortably. Finally, students bring their own knowledge and expertise to this environment to make the courses rich experiences for learning and professional development.

Labeled squares in Figure 1 represent the roles and contributions of these four areas. Importantly, while each of these four areas makes unique contributions, each area also provides support to the other three areas and must integrate successfully with these other areas in order to present a strong DL learning environment. In synchronous DL classes, the interaction between the instructor and the student occurs in ”real time,” and therefore is more complex than the asynchronous DL classes. Synchronous DL technologies also have the potential to create more faculty concerns than the asynchronous technologies due to this complexity. This fact makes the degree of support among these four areas critical. This supportive function and collaborative role is represented by the central circle in Figure 1.

1. Distance Learning Faculty

In his study, Thurmond (2003) found that student fulfillment depends more on the quality and effectiveness of the instructor and the instruction than on the specific technology used in delivering the knowledge. Consequently, determining and understanding the challenges that DL faculty experience is the key factor related to student satisfaction and to learning.

Various motivational structures shape faculty perceptions of instruction; consequently, faculty vary greatly in the way they carry out their assigned tasks. As a result, it becomes increasingly difficult for administrators to influence almost any characteristic of faculty instructional performance (Hagner & Schneebeck, 2001). However, technological change has made an impact on both faculty and administrators’ perceptions of education. This fact, coupled with the change in the nature and expectations of students, has produced a strong momentum for change and transformation

in education that has impacted almost all faculty. This transition, not surprisingly, has resulted in challenges for many faculty who teach DL programs (Howell, Saba, Lindsay, & Williams, 2004).

Today, many DL instructors are faced with steep learning curves because of their knowledge gaps. These knowledge gaps occur when a faculty member's level of expertise is not enough to integrate technology into his/her instruction. The faculty member may have inadequate knowledge about the computer technology and/or how to integrate it into his/her teaching. For example, if a faculty member is not very computer literate, it may take more time and be more troublesome for that person to fill in the knowledge gaps and to become an experienced DL course developer and instructor.

The quality of faculty DL instruction depends heavily on how they are able to adapt to the instructional technologies available to them and how they are supported throughout the process. A faculty member who has enough background in computer technology may need help or support in integrating this technology into his/her teaching, since the roles of the faculty change in a synchronous DL environment. In a DL environment, the instructor moves away from being an expert into the role of a guide and a coach. For many faculty members, this change in roles is an interesting challenge; for many others it is a difficult task to undertake; and for those who believe "real" learning can only occur through classroom interaction, DL instruction is an unnecessary and unwelcome change.

Apart from the obstacles related to the technology, DL faculty have other concerns, such as:

- Need for time to develop DL instructional strategies and materials (Howell, Saba, Lindsay, & Williams, 2004)
- Distance Learning training and support (Howell et al., 2004)
- Communication problems between faculty and administration (Suchan, 2001; Groen, Tworek, & Soos-Gonczol, 2008)
- Intellectual property and course ownership issues (Howell et al., 2004)

- Additional compensation (National Education Association, 2008)
- Threats to job security resulting from the fear of losing their jobs because the institutions in which DL courses are taught will not need as many faculty as they used to (Moreland & Saleh, 2007)
- Process of student assessment, the time a student spends in DL as compared to an equivalent face-to-face class (Moreland & Saleh, 2007)
- The potential loss of focus on their research agendas due to the heavy course workload resulting from DL (Chisholm, 2006)
- Fear of invalidation of their instructional interaction skills (Suchan, 2001) .

Institutions have to be aware of the challenges their faculty experience and support the faculty to enhance effectiveness of their DL programs.

The DL literature indicates that there are strategies that university administrators and faculty can consider as part of their own strategic plan to reduce the faculty concerns and enhance the effectiveness of their DL programs. Some of these strategies are:

- Enable colleges and departments to accept more responsibility for DL activities
- Provide more 'hands on training' and production support for DL faculty
- Encourage faculty to combine technology into their traditional, face-to-face classrooms
- Develop strong reward structures across department and college lines
- Provide more release time for course development or adoption
- Build a stronger DL faculty community
- Encourage more DL scholarship and research
- Make sure that effective course evaluation processes are in place for the remote site students (Howell, et. al, 2004; Mantyla, 2000)

By adopting some of these proposed solutions and, more importantly, creating their own solutions based on the challenges affecting their own faculty and the institution, faculty and administrators may enhance DL instructor satisfaction and the effectiveness of their DL programs.

C. OBJECTIVES AND RESEARCH QUESTIONS

1. Objective

The objective of this study is to review the synchronous DL Literature and to conduct interviews with the GSBPP faculty who have used synchronous technologies such as Elluminate and VTC, to determine the challenges DL faculty face while conducting synchronous Distance Learning classes and their strategies for overcoming those challenges. This study will provide recommendations to make synchronous DL instruction more effective, based on the DL literature and GSBPP faculty insights.

2. Research Questions

a. Primary Research Questions

(1) What are the perceptions of faculty about teaching in a synchronous DL environment using Elluminate and VTC as delivery media?

(2) Is the quality of student-instructor and student-student interactions in Elluminate comparable to interactions in the VTC environment?

b. Secondary Research Questions

(1) What strategies should the GSBPP administration and faculty follow to relieve faculty concerns and ensure DL program success based on faculty criteria of instructional effectiveness?

(2) What should be the instructor's role in the DL case discussion environment? To what extent does the instructor have a significant role in managerial, social, technical and pedagogical areas in synchronous DL learning environments?

3. Scope and Limitations

a. Scope

The revolution in information and communication technologies and improvements in the bandwidth of Internet access have made the use of synchronous DL environments for course delivery more popular (Kwok, 2007). Despite its popularity and the advances in the technology, there are still some concerns raised by faculty when it comes to delivering instruction through synchronous DL technologies. This study first examines current synchronous DL literature and looks for common concerns that were raised by the faculty about teaching in synchronous DL environments. Secondly, the study uses semi-structured, open-ended interviews to understand GSBPP faculty concerns about VTC and Elluminate. Third, the results of the interviews are analyzed to determine to what extent the four key areas (program administration, technology support, faculty, and students) support each other from the point of view of the faculty. Finally, the study suggests strategies for GSBPP administration and faculty to overcome the difficulties perceived by the faculty that will help ensure synchronous DL programs success.

b. Limitations

While developing the model in Figure 1, Groen, Tworek, & Soos-Gonczol (2008) defined their purpose as:

> the overarching question we wished to pursue is how the intertwined support and functions among components in the system should function to create and sustain an effective multi-faceted (synchronous and asynchronous) distance delivery program; with a particular focus on synchronous communication. Through this exploration, we also wished to develop recommendations for the creation and maintenance of such a program. (Groen et al., 2008)

These researchers also emphasized the importance of understanding the DL program from the perspectives of the four key areas represented in the model. They stated that their study is unique since it brought stakeholders of four key areas together to understand their perspectives toward the DL program for creating an effective DL

environment. In contrast, this study focuses on only one key area, the faculty in relationship to the various system elements in the model.

Another limitation is the study's small sample size: 13 GSBPP faculty were interviewed in this study. With larger sample sizes, a future extension of this study could determine the perceptions of the other three key areas of the model for a broader understanding of the challenges of a DL program.

4. Organization of the Project

This study is organized into five chapters. Following the introduction and the background information of the research area in Chapter I, Chapter II looks at the existing synchronous DL literature to provide pertinent information regarding synchronous DL and faculty concerns about its use. Chapter III discusses the rationale for using open-ended interviews and describes the participants and the interview questions in detail. Chapter IV describes the common concerns perceived by the GSBPP faculty and analyzes the available data of common concerns based on the literature and the DL systems model. Chapter V presents conclusions and recommendations for improvements to GSBPP synchronous DL programs.

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II. SYNCHRONOUS DL OVERVIEW

A. EVOLUTION OF DISTANCE LEARNING

Maston (2006) defined the first milestone in distance education delivery (as cited in Campbell, 2006) as Plato's introduction (in 360 B.C.) of a new asynchronous technology to formal education: the written word. According to Duffy (1999), there are two goals that seem to have an impact on the history of distance education delivery. The first one is enabling access to instruction for students unable to attend traditional face-to-face classes. The second goal is to make sure that the quality of instruction delivered in DL is equal or better than it would have been in a traditional face-to-face teaching-learning environment.

Duffy (1999) stated that the quality of the instruction delivered in DL depends on the quality in three dimensions: quality of instruction in terms of pedagogy, interaction between faculty and student, and finally interaction among peers. Duffy believed that once the quality in these three dimensions is ensured, the instruction delivered would be as rich a growth experience as it would have been in a traditional face-to-face class. She pointed out that early DL programs were only designed to achieve the first goal.

Harting & Erthal (2005) stated that the first type of DL program, introduced in the 1700s, was the correspondence school model in which the lessons and student responses were carried by mail. They went on to define the historical evolution of DL and talked about the Lyceum and Chautauqua movements, which were concerned with the instruction of adults and spreading information on the arts, sciences, and humanities. They next reviewed the home-study program of Illinois Wesleyan University in the 1870s and the establishment of "Correspondence University" in 1883 at Ithaca, New York as the first organized DL program. On the other hand, Motamedi (2001) cited a University of Michigan work (1995) in which he gave the year 1892 as the birth date of distance education in the United States, since the University of Wisconsin began using the term correspondence course in its catalogue in that year. Both Motamedi (2001) and Harting & Erthal (2005) described William Rainey Harper, the first president of the University of

Chicago, as the founder of correspondence education in the United States. Motamedi (2001) stated that the first known use of correspondence education took place in 1906 and dealt with the areas of elementary and secondary education.

According to Harting & Erthal (2005), after these early implementations of DL a new era dawned in DL history, with the evolution of instructional delivery technologies like slides, motion pictures, and radio. Thomas Edison was one of the pioneers who produced films for the classroom environment (Berg, 2003). Distance educators were so excited about these technological breakthroughs that they were quick to adopt the new technologies and implement them in their programs. The first educational film catalog, listed in 1910, consisted of 1,065 titles (Berg, 2003). According to a study conducted by Penn State University (1997, as cited in Motamedi, 2001), the first Distance Learning course using radio technology was delivered at the University of Wisconsin's radio station WHA in the 1920s. By 1936 some schools—like the University of Wisconsin, University of Kansas, and University of Michigan—adopted radio technology in their credit and self-enrichment adult education courses (Berg, 2003; Harting & Erthal, 2005).

With the invention of television and microwave transmission, distance educators realized the potential of these technologies as the delivery media for education. By the late 1950s, there were 17 programs that used television as part of their instructional materials (Harting & Erthal, 2005). Audio teleconferencing and cable television became a part of DL instructional methods during the 1960s and 1970s. Integration of even more advanced technologies such as satellite, audio, video, computer technologies, e-mail, and the World Wide Web to the DL programs occurred in the 1980s and 1990s (Motamedi, 2001). However, faculty acceptance of the computer technologies took time owing to the "boring and unimaginative software" that was designed for the delivery of education (Harting & Erthal, 2005).

Today, there exist five major technologies to support DL instruction: the Internet, groupware, educational TV, one-way video/two-way video and two-way audio/video. The instructional materials are delivered by textbooks, video/audio tapes, CDs, and the Internet (Harting & Erthal, 2005).

The future of DL seems promising. According to the Distance Education Survey (2007) the outlook for the DL market is strong, and will continue to grow for many years. Not only the market, but also the public acceptance of DL is growing and the competition in distance education at all levels is increasing. In fact, higher education will turn to DL as a "mainstream delivery medium" in the next three years (Distance education survey, 2007). According to Maeroff & Zemsky (2007), in the next five years there will be more hybrid courses in which the students attend traditional face-to-face classes as well as DL classes.

Although this new and powerful technology will play a great role in delivery of distance education, researchers point out that instructors teaching at a distance should always remember that technology should be a tool while teaching in a DL environment, rather than making the instructors themselves the tools. In other words, "technology should adjust to and enhance educators' and practitioners' best practices rather than limiting them" (Quinn, 2008).

In summary, DL is becoming a major part of the education process and will continue to be an important part of the educational delivery system of many educational institutions (Maeroff & Zemsky, 2007).

B. THE WEB AND LEARNING ENVIRONMENTS

1. Learning Environments

There is a variety of environments in which learning can take place. Time and location are two critical factors in classifying these instructional environments. According to Aggarwal & Bento (2002), the four major types of instructional environments are: face-to-face, lab units, synchronous distance learning, and asynchronous learning.

a. Face-to-face Environment

The first teaching environment is the traditional face-to-face classroom, where instructor and students come together at the same time and in the same place to

interact with each other on a specific topic, process, or problem. Instructor-student interaction is "many-to-one" during class. Individual or group work can occur during class and/or any non-class time that students choose (Aggarwal & Bento 2002).

b. Lab Units

The library, lab, and information center are other places where students come at any time convenient for them to receive standardized instruction. These places represent the second type of teaching environment. When the Web is used to provide support and expand the limits of this environment, students gain access to an abundance of multimedia information, materials, tutorials, and resources to perform lab assignments, do library research, or complete modules of instruction according to their own speed of progress (Aggarwal & Bento, 2002).

c. Synchronous Distance Learning Environment

The third type of teaching environment represents Distance Learning programs where students from different locations can be taught synchronously through DL mediums. Synchronous DL will be discussed in more detail in the following sections.

d. Asynchronous Learning Environment

The last type of teaching environment is represented by asynchronous courses, where learning occurs anywhere, anytime, and individually. The Web, when it is used in an asynchronous DL environment, makes its maximum contribution in removing time and space barriers between the instructor and learner.

2. The Web

There are two different ways of using the Web to teach. The first is the Web-Assisted Course (WAC), which uses a traditional classroom setting. In WAC, the Web is used for obtaining grades, downloading course documents, and exchanging e-mails for communication among participants in the learning environment. The second way of using the Web to teach is through a stand-alone Web-Based Course (WBC), which can be

delivered to students who are geographically dispersed from the institution that offers the courses they would like to take. These students take the course online from anywhere in the world (Matthews, 2002).

However, the Web is a useful tool to support all four types of instructional environments. When live Internet connection and/or projection capabilities are used to improve synchronous teaching environments' effectiveness (face-to-face and Distance Learning environments), the Web can be used to support or simulate classroom interactions in multiple ways by:

- Serving as a platform for synchronously delivering audio text and video to students in the first and the third type of teaching environments (traditional face-to-face classroom and synchronous DL)
- Allowing real-time virtual visits to the sites related to the class topic
- Enabling synchronous discussions through text-based technologies (like chats) or two way video-audio interaction through software such as Net Meeting and Elluminate (Aggarwal & Bento, 2002)

Aggarwal & Bento (2002) stated that a linear transition of instruction from traditional face-to-face to DL is not enough; teaching effectively in the DL environment requires a change in instructional aspects such as lecture delivery style, role of the faculty, and student interaction and assessment. The faculty, who make a transition from traditional face-to-face instruction to DL instructional methods, should not consider the technology itself as more important than "what" is being learned and "how" learning takes place (Aggarwal & Bento, 2002).

Factors affecting the role of faculty in the DL environment, and the changing role of the DL faculty as a result of these factors, will be discussed in the next sections of this chapter. First, however, faculty perception of DL will be discussed to help better understand the concerns of the faculty who teach at a distance.

C. FACULTY PERCEPTION OF NEW TECHNOLOGIES

With the shift in emphasis from teaching to research (and incorporation of the computer into university research) during the 1970s, faculty who were unwilling to adopt the new computer technology had difficulty in establishing their professional careers. Consequently, their unwillingness to adopt new technologies, coupled with inadequate training and instructional support from the universities, led them to seek early retirement or end their careers on a "bitter note" (Hagner & Schneebeck, 2001).

Today, schools offering traditional face-to-face instruction are utilizing DL more and more (Distance education survey, 2007), and students' demands for DL are growing rapidly (Aggarwal & Bento, 2002). In other words, the world around faculty who are resisting new instructional technologies is changing. Chisholm (2006) also stated that a faculty member who thinks that the impact of technology on pedagogy will not effect his/her department or the way he/she teaches is either very naive or very close to retirement.

Hagner & Schneebeck (2001) conducted a study during which they interviewed 240 faculty at the University of Hartford. They classified faculty according to their perceptions of new technology in the new teaching-learning environment. In this study, they examined the relationship between the probability of faculty adopting new ways of teaching caused by new instructional technologies and the characteristics of one of the following four groups: entrepreneurs, risk aversives, reward seekers, and reluctants.

1. The First Group: The Entrepreneurs

The first faculty group is the pioneers who value innovation and risk taking in teaching and learning. Hagner & Schneebeck (2001) conducted interviews with the entrepreneurs and found two factors that explained their motivations for their work: a high level of commitment to quality teaching and learning and an informed capability with the new teaching and learning technologies. Landis, Squires, & Leach (2000) added another factor for explaining their motivations and stated that there is a self-perceived need for their course(s) outside the traditional teaching-learning environment. Although

the faculty in this group do not expect rewards or recognition for their work, they nevertheless are disappointed when they do not get any positive feedback from their institutions for their innovative instructional efforts. One other important characteristic of this group is that their positive attitudes toward teaching at a distance increase with their experience, and they rely on their own instructional experiences to solve the instructional problems they face while teaching at a distance (Hagner & Schneebeck, 2001).

2. The Second Group: The Risk Aversives

The faculty in this group also share the commitment of the entrepreneur faculty to quality learning. However, they are more risk aversive and are afraid of losing their current success in teaching when they make the transformation into the new teaching environments (Hagner & Schneebeck, 2001). They often lack the technical expertise and, therefore, have to be well supported in making the instructional transformation. These faculty may be attracted to the new technologies and their potential for improving the job they do, but they choose to wait until they know more about this new environment. According to the survey conducted by the National Education Association (2008), 27% of faculty were risk aversive; they remain neutral or undecided about DL instruction and are waiting to see the implications of the DL courses for students, their institution, and themselves. Of the other survey respondents, 51% held positive feelings toward distance learning courses, while 22% held negative feelings (reluctants) .

Hagner & Schneebeck (2001) stated that there are two critical steps to encourage this risk-averse faculty to work in this new teaching-learning environment:

1. provide information to faculty that can demonstrate the effectiveness of the new forms of teaching, including examples of success stories from faculty they consider peers
2. create a support environment that facilitates their transition to DL

3. The Third Group: The Reward Seekers

These faculty members' motivation is tied closely to the university's reward structure. In other words, they view adopting technology-based teaching techniques as a

path to promotion. These faculty members participate only when it provides them with the opportunity to advance their professional careers (Hagner & Schneebeck, 2001).

According to Hagner & Schneebeck (2001), the use of the new technologies in course delivery will require redefinition of the tenure and promotion criteria. They state that this redefinition process, including new forms of virtual scholarship, should take place at each level of the university hierarchy.

4. The Fourth Group: The Reluctants

There is a tendency for some faculty to feel that distance education training is unnecessary. This group of faculty consists of those who are computer illiterate or strongly believe that traditional face-to-face environments are superior (Hagner & Schneebeck, 2001). For example, 900 faculty members signed petitions opposing plans for a virtual university at the University of Washington (Mantyla, 2000). As indicated earlier, according to the National Education Association (2008) 22% of traditional fulltime faculty have negative feelings toward teaching at a distance. Rather surprisingly, 14% of the DL faculty also hold negative feelings toward teaching at a distance.

According to Howell et al. (2004), the faculty who try to teach at a distance using traditional face-to-face methods will soon realize the need to use properly the new technology to interact effectively with learners in the DL environment. As a result, they soon realize they have to modify their face-to-face methods and integrate technology in various ways into their instruction to teach efficiently at a distance. There are several factors affecting instructors' professional careers. These factors and the changing role of the faculty will be discussed in the next two sections.

D. FACTORS AFFECTING THE ROLE OF THE FACULTY

Faculty have to put in time and effort to learn to teach in a synchronous DL environment. It is important that they are excited to be a part of the DL program and adjust their methods to the new teaching environment. On the other hand, faculty have difficulty changing the way they teach. Part of that difficulty stems from the fact that in a DL environment, the role of faculty changes in many ways. The flattened traditional

hierarchy and redistributed power and control in the DL classroom force faculty to develop and design their activities and interactions according to the new requirements of this environment (Schrum & Benson, 2002).

According to Howell et al. (2004), there are four significant factors affecting faculty members' establishment of their professional careers.

1. Traditional Faculty Tasks are Shifting

According to Paulson (2002), the faculty role includes three functions: research, teaching, and service. She stated that instead of having a faculty member perform all these instructional and service tasks, institutions are now dividing up the tasks managed by a faculty member in the past and assigning those tasks to specialized teams and staff professionals. She gave an example to better illustrate how the tasks a faculty member may carry out when delivering instruction are assigned to different teams and/or staff. In her example, the tasks the faculty member should carry out when delivering instruction are:

- Designing the course
- Developing the course by selecting appropriate instructional methods and course materials
- Delivering the course content
- Mediating the learning process by tailoring the materials or concepts according to students' levels of understanding
- Assessing individual student learning through appropriate methods and assignments

Paulson pointed out that DL environments permit the performance of some of these tasks through the use of technology. According to her example, the institution may rely on an external vendor to develop course material and the content might be developed through technology by non-tenure-track instructional staff such as adjunct faculty, graduate, or undergraduate teaching assistants. In these specialized teams, the institutions

deliberately utilize more non-tenure-track staff—graduate and even undergraduate assistants—enabling highly trained faculty to focus on research (Paulson, 2002). In the synchronous DL environment, the instructor is still responsible for teaching, grading, problem solving, organizing, coaching and even facilitating, but some of these roles (such as facilitating) are enlarged while others (like mentoring, counseling, supervising, and role modeling) are diminished (Howell et al., 2004).

2. The Need for Faculty Development, Training, and Support is Growing

The quality of the faculty, their level of expertise in teaching, and their level of integrating new technologies into their instruction are some of the key factors for instructional success both in DL and traditional face-to-face learning environments. Faculty development is an even more significant issue while teaching at a distance, since faculty's level of expertise in teaching in a DL environment is an important factor for achieving course learning outcomes.

Since synchronous DL requires faculty to learn a whole new set of tools, techniques, and abilities to adapt to the new environment, professional development becomes paramount. Especially with the integration of new technology, extensive and continuous training is necessary in order to meet the demands of this new environment. Faculty should develop and maintain the information technology (IT) and information literacy skills that are necessary to develop quality DL learning experiences, and the DL staff should proactively introduce faculty to new software and Web capabilities in order to help their adaptation to the DL environment.

Apart from the aforementioned technological training, faculty may also need pedagogical training since the two go hand-in-hand (Schrum & Benson, 2002). The first step in pedagogical training should be introducing faculty to the interactive models of learning (Schrum & Benson, 2002). Interactive models of learning indicate that four types of interactions are required for effective DL learning: learner to instructor (Moore, 2000), learner to content (Moore, 2000), learner to learner (Moore, 2000) and learner to technology (Schrum & Benson, 2002). According to Schrum & Benson (2002), once the

faculty are introduced to interactive models of learning, they can start thinking of their courses in terms of these four interactions. Researchers state that institutions should provide technology training and introduce DL tools, which facilitate the interaction, to faculty when they start thinking of their courses in terms of these four interactions.

According to Chisholm (2006), some faculty do not care to reinvent their instructional careers or put in long hours required to teach effectively in the DL environment. However, those faculty who do not have much incentive to learn how to teach in the DL environment will soon realize how critical the effective use of technology is in communicating with learners in that environment. In spite of the initial resistance of some faculty, many now know that they must improve their teaching skills and even develop new skills to teach effectively at a distance (Howell et al., 2004). In other words, faculty who initially try to implement the very same techniques they use while teaching in traditional face-to-face environment realize that those techniques are not enough to teach well in the DL environment. In the end, most of them integrate the technology into their instruction and meet the learning challenges of the DL environment.

3. Faculty Tenure is Being Challenged

The shifting of faculty roles has resulted in a change in the very nature of the ‘‘faculty’’ position itself (Howell et al., 2004). Many faculty, most of whom are non-tenure track, are now undergoing extensive training to integrate new technology into their teaching methods so as to communicate with and provide feedback to students at a distance (Howell et al., 2004).

Labor intensity is one of the principal factors that increases the cost of education (Paulson, 2002). The need for, and meaning of, faculty tenure in the academic context is threatened by universities that are increasingly using less expensive labor (i.e., non-tenured faculty, adjunct or part-time faculty, and graduate students) to staff their courses and provide service to their students (Howell et al., 2004). According to Chisholm (2006), institutions that teach completely online or exclusively for profit have standardized curricula, no humanities courses, no tenure system, and little job security. Chisholm (2006) gave the example of the terminology these institutions use to better

illustrate their approach to the tenure system. She stated that the terminology that these institutions use resembles the terminology of the private sector in which the students are called "clients" or "consumers," faculty are called "content providers," and knowledge is called a "product" that needs to be transmitted to the student. According to de Alva (2000, as cited in Howell et al., 2004), a survey of governors from all 50 states found that the universities trying to eliminate faculty tenure are not alone in their attempts. According to the survey, the least desirable feature of a 21st century university was "maintaining traditional faculty roles and tenure."

4. Faculty Attitudes toward DL are Improving as They Participate in DL Courses

Some of the factors on which the faculty attitudes toward teaching in the DL environment depend are their personal preference and level of expertise in technology (Lao & Gonzales, 2005). A survey conducted by the National Education Association (2008) showed that more faculty who participate in DL instruction (72%) viewed distance education favorably than those not participating (51%), and that senior faculty are just as eager as new assistant professors to change the way they teach in order to meet the instructional requirements in the DL environment. This finding also partly dispels the perception that only younger teachers are willing to teach DL courses. Also, in a study conducted by Lao & Gonzales (2005), three of the six professors interviewed stated that they were willing to teach online courses after their first DL teaching experience. Suchan (2001) found that faculty attitudes toward DL depend heavily on their technological background, level of expertise on the technology and the type of courses they teach. His findings suggested that the social-science faculty had more concerns about DL than those who teach natural science and physical science.

In this section, factors like changing instructional tasks, the need for DL faculty development, the threat to faculty tenure, and the faculty expertise in teaching DL courses were discussed. The next section covers the changing role of the faculty as a result of these factors and the new DL technology.

E. ROLE OF THE INSTRUCTOR IN THE DISTANCE LEARNING ENVIRONMENT

As indicated above, the roles of faculty are changing because of new instructional technologies, learning needs, and student profiles. DL represents an opportunity for educators to shift the role of the instructor away from the delivery of content and toward a more learner-centered focus that emphasizes strategies to meet instructional learning outcomes. Today's learner population and their needs and the dramatic growth in technology challenge the traditional lecture-based way of instructing that has been in place for hundreds of years. No longer is teaching confined to a single-mode classroom model, as the rapidly developing technology provides flexible learning options (Mantyla, 2000).

1. Changing Role of the Faculty in the Distance Learning Environment

The DL environment, which is a learner-centered environment based on the nature of information and communication technologies, should change the faculty member role from a deliverer of information and the source of knowledge to a person who has a supportive, facilitative role in the teaching-learning process (Conciecao-Runlee, 2001). From this perspective, the best instruction becomes a learner-centered activity that takes full advantage of the convenience of the synchronous DL environment to meet the learner's needs (Graves, 2001). A learner-centered environment is not as controllable and predictable. In this environment, faculty may have to engage in new kinds of activities (like facilitating a conversation in a chat room or supporting peer discussion and analysis in small groups in a synchronous DL environment), recognize the changes in the educational model, and ultimately rethink the meaning of being an instructor (Conciecao-Runlee, 2001).

Several studies have been conducted to better understand the instructor's role in synchronous DL environments. For example, Burnett (2003) examined the role of the instructor in synchronous online chat by analyzing the text chat records. He found out that there are three areas in which the instructor has a responsibility in online text chat: social, organizational, and intellectual. Kwok (2007) also found that instructors had a

very important role in the four functions (social, managerial, technical, and pedagogical) in chat room activities. According to both studies, the instructor needs to play the role of a facilitator rather than a leader to establish a supportive atmosphere in the synchronous DL environment. According to Aggarwal & Bento (2002), the instructor's roles are those of a facilitator, mentor and coach in the DL environment. As a facilitator, the instructor has to know how to facilitate discussions in small groups and how to keep interest alive. Moreover, the instructor has to know how to keep students task-oriented, maintain communication with students and interaction among them, and finally move them toward some sort of consensus. Also, Burnett (2003) stated that the social dimension is a key factor to be considered in establishing a supportive environment in synchronous interaction, and pointed out that the instructor needs to play the role of a facilitator rather than a director.

Unlike some researchers (Howell et al., 2004), who stated that mentoring and coaching roles of the DL faculty are diminished, Aggarwal & Bento suggested that mentoring and coaching are among the DL faculty roles. As a mentor and a coach, the instructor needs to advise students on their progress in a supportive way. The instructor also has to provide counseling and offer prompt and constructive feedback to his/her students (Aggarwal & Bento, 2002). Furthermore, the instructor has to anticipate problems and be available online to answer or track questions (Onay, 2002). However, the instructor is not a 24/7 help desk where students seek help on any topic; therefore, the instructor may need to fight the temptation to become a constant information resource (Aggarwal & Bento, 2002).

Encouraging input from nonparticipating students becomes another instructor task when some group members dominate interaction (Aggarwal & Bento, 2002). In addition, students prefer instructors who take a proactive approach (seeking feedback and making some adjustments according to the students' needs) to their synchronous DL classes in order to arrange a constructive learning environment in which the participants learn from each other (Eastman, Swift, Bocchi, Jordan, & McCabe, 2003).

2. Technical and Pedagogical Training of Faculty to Adopt Their New Roles in Distance Learning Environment

According to Aggarwal & Bento (2002), faculty who become involved in DL education need technical and pedagogical training to accommodate these new roles. Aggarwal & Bento (2002) showed that faculty need to have pedagogical training so they can take full advantage of the new learning opportunities (generating active, hands-on learning and having access to a broader mass of information) created by the DL environment, and that technical training is necessary for faculty to develop and deliver course content effectively. Onay (2002) also states that the faculty need to learn new abilities for preparing and updating course content and interacting effectively with students in the DL environment. As indicated earlier, instructors will not be as effective in the DL environment if they merely replicate the pedagogical strategies they use in the traditional face-to-face classroom (Aggarwal & Bento, 2002).

Instructors will have additional responsibility when course preparation requires use of a team (e.g., graphics and animation expert, instructional designer, technical specialists) to assist the instructor in course design. In this case, coordination among the team members is the responsibility of the instructor (Onay, 2002).

Faculty might need additional training in message content analysis, which is a standard methodology in the social sciences for studying the content of communication. Body language, facial expression and other nonverbal forms of communication are key factors faculty must assess in the traditional face-to-face environment. They provide some clues for understanding to what extent does the student understand the concepts that are being discussed. Those cues are either unavailable (e.g., Elluminate) or difficult to assess in the VTC learning environment.

In summary the instructor, who plays a significant role in facilitating a meaningful interactive learning experience for students in synchronous DL environments (Aggarwal & Bento, 2002), has new roles while teaching at a distance. The role of the instructor changes from a deliverer of information and the source of knowledge to

facilitator, mentor and coach in the DL environment to achieve effective interactivity and collaboration. Finally, in order to develop these new roles, faculty need technical and pedagogical training.

The next two sections will explore the synchronous DL environment and two synchronous DL technologies—VTC and Elluminate—in detail to better understand the benefits and limitations of the synchronous DL environment and the technologies with which the instructors deliver courses.

F. SYNCHRONOUS DISTANCE LEARNING

As indicated earlier, universities have to redefine their learning environments to meet the growing demand for learning in a global knowledge economy. Another reason is the availability of powerful technologies and emerging competitors in the education market (Onay, 2002). Synchronous technologies such as video-teleconferencing systems are just one of a number of technologies that caused universities to redefine their learning environments.

Duffy (1999), defined synchronous DL as a time-bound delivery in which the students and the instructor meet together at a certain time but in different places in order to participate in the teaching/learning process. The instructor may conduct a conference call with the students, each of whom is in a different location; several groups of students may meet together in different places but at the same time to participate in a live video teleconference with an instructor; or students may join an instructor in a “live chat room” on the Internet (Duffy, 1999). There are also several other ways of conducting synchronous DL instruction. Courses may be delivered to students who are located at different locations by using synchronous DL products (e.g., Elluminate, FlashMeeting, Adobe Acrobat Connect Professional, etc.) as a delivery medium. Kwok (2007) argued that the quality of discussion, active participation, and group dynamics improve when instructors began to use these synchronous collaborative systems (e.g., video-teleconferencing, group decision support systems) as a teaching medium.

The most important aspect of most educational experiences is the ability to see and hear the instructor and other students (Quinn, 2008). Virtual classroom (VC), a

commonly used term for synchronous online environments, is an online environment where participants using personal computers with Internet connection, webcam and headsets can see, hear, type, and share information with each other regardless of their location (Quinn, 2008). Elluminate is one example of a VC. The instructor using a VC can teach a course on a specific subject to students from around the globe who attend by sitting at their personal computers. VCs, which are based on synchronous text, audio and video, have the potential to change the way educators and trainers teach, and practitioners deliver services to clients. Some of the features of VCs are synchronous document sharing, text chat, white board discussions, and two-way audio-video conversations between multiple users at different locations.

The students stated that they felt comfortable with the personalized feeling and convenience VCs offer (Quinn, 2008). Furthermore, VC functionality will greatly expand as VCs mature and features expand (Quinn, 2008). Also, high bandwidth will have a great impact on VC functionality, since high bandwidth means quick loading of Web pages as well as clear picture and sound.

1. Benefits of Synchronous Distance Learning

The use of synchronous conferencing techniques has unique educational benefits. According to Steeples, Jones, & Goodyear (2002), synchronous interaction allows for simulation of a traditional face-to-face classroom learning situation and the immediate interactivity enables easy clarification of meaning. Instructor and students' feeling of instantaneous contact and even of having fun are two of the valuable traits that synchronous conferencing capabilities offer (Salmon, 2000).

Another important capability of the synchronous DL environment is that it enables instructors to implement teaching techniques that cannot be duplicated in the face-to-face traditional classroom. For example, instructors can analyze class interactions illustrated by online synchronous teaching products such as FlashMeeting, and can also invite guest speakers from anywhere around the world by eliminating distance barriers (Quinn, 2008).

Researchers have also discovered that—unlike many of their colleagues—some faculty teaching DL courses describe DL teaching as more rewarding than traditional face-to-face teaching and their experience with DL students as good as or better than traditional students (Conciecao-Runlee, 2001; Rogers, Graham, Rasmussen, Campbell, & Ure, 2003).

2. Disadvantages

(Duffy, 1999) noted that the disadvantages of synchronous DL include many of the same difficulties that can be found in a traditional face-to-face classroom. For example, the instruction is time-bound, which means the students who are unable to participate at the predetermined time miss not only the instructional event but also the benefits of the participation. According to Duffy, another common difficulty in both traditional classroom and the synchronous DL is the passive role of the shy or self-conscious student. In synchronous DL, live interaction does not always mean that every student able to attend class participates actively. Although all the students have the opportunity for interaction, some would only like to follow the interaction rather than share their opinions (Duffy, 1999). However, studies have revealed that students who don't respond to questions raised by their classmates during face-to-face classes respond to those questions in a synchronous DL environment. The absence of physical presence seems to relax those shy students (Kwok, 2007).

Kwok (2007) found out that although instant responses have unique benefits, in the synchronous DL environment they are not as natural as responses in the face-to-face environment. Furthermore, DL responses do not create the same impact on the learner due to the lack of presence of the instructor.

According to Anderson (2006), synchronous DL technologies provide less interaction among students and between teachers and students due to the existing technological distance between students and teachers. In-depth clarification of academic concepts also seems difficult during synchronous DL interaction. Moreover, synchronous

interaction, which requires immediate responses, can result in poor discussion quality for some students because the opportunity to participate may be lost if the pace of the discussion moves too quickly (Kwok, 2007).

In conclusion, synchronous DL tools, once they are used effectively, can make a significance difference in learner results (Kwok, 2007). However, these technologies do have some disadvantages (time-bound delivery of the courses, ineffective responses due to the lack of instructor social presence, existence of students who chose not to participate, etc.) some of which can also be found in the traditional face-to-face teaching-learning environment. The next section will cover two DL modalities that are used at Naval Postgraduate School.

G. VIDEO-TELECONFERENCING AND ELLUMINATE AS DELIVERY MEDIA IN THE DISTANCE LEARNING ENVIRONMENT

Institutions need to carefully choose the synchronous DL technologies they adopt; no one synchronous DL technology is the best for every institution. Institutions have to conduct a cost-benefit analysis to choose the appropriate technology. In addition, they have to consider the pedagogical effectiveness of their decisions, since faculty will teach courses with the technology chosen. The new technology has to meet faculty expectations in areas such as user friendliness, quality of education delivered in DL environment, and capacity (the number of learners the faculty can reach without any problems regarding the technology used). Of prime importance are the usefulness of the learning and interaction features incorporated in the DL platform and their user friendliness.

Since technology is improving rapidly, selecting a synchronous DL technology is difficult. As indicated earlier, this study will focus on two technologies: two-way video and audio video-teleconferencing, and Elluminate.

1. Video Teleconferencing (VTC)

Video teleconferencing is an interactive tool that uses video, computing, and communication technologies to allow people around the globe to meet as if they were

face to face and to perform certain tasks as if they were in the same room or at the same site (Purdue, 2008). Video teleconferencing transmits audio and video simultaneously between two or more sites in both directions. Participants of a videoconference can at the same time hear, speak, and interact with one another at a distance (Uwex, 2008). This communication is performed through the use of cameras (to capture and send video from the local endpoint), video displays (to display video received from remote endpoints), microphones (to capture and send audio from the local endpoint), and speakers (to play audio received from remote endpoints) (Vide, 2008). Video teleconferencing is a popular technology on campuses due to its unique advantage of bringing together remote students, faculty, researchers, and other entities. In the literature, the terms videoconferencing, videoconference, videoconference system and video teleconferencing are often used interchangeably.

a. Types of Video Teleconferencing

According to Purdue (2008), there are two main formats of video teleconferencing:

(1) Point-to-point: Point-to-point video teleconferencing is between two sites. The participant site dials the other video site to start the conference. Each participant can share documents through use of document cameras and PC screens (a Word, PowerPoint, Excel spreadsheet, or virtually any document on their PCs) and talk with remote site participants.

(2) Multi-point: Multi-point video teleconferencing is between more than two sites. Three or more participant sites can communicate with each other as if they were at the same location.

Both point-to-point and multi-point video teleconferencing users can choose between two additional options: desktop video teleconferencing and room-based video teleconferencing (Purdue, 2008):

(3) Desktop: Desktop video teleconferencing is useful when there are four or fewer participants at each site (Purdue, 2008). Participants use their own

personal computers. These computers must have robust video teleconferencing capabilities to enable full-motion interaction and the sending and sharing of documents, videos, and other communication aids.

(4) Room-based: room-based video teleconferencing represents the traditional use of this technology. It requires a special video-teleconferencing room that was designed and equipped solely for this purpose. There are low-cost mobile units available that are ready for use when and where the need arises (Hunter, 2008). Room-based video teleconferencing is good for groups of at least three per site. This type of technology is most useful for complex student-teacher interaction such as problem-solving cases discussions and analyses (Maeroff & Zemsky, 2007).

b. Benefits-Advantages of VTC

According to Motamedi (2001), there are a number of benefits of video teleconferencing in education. These systems can:

(1) help reduce or eliminate travel time and expenses resulting from moving from one location to another to attend classes.

(2) help educational institutions achieve greater educational reach and revenue by expanding programs to new audiences, including international students.

(3) support the use of wide array of media (e.g., photos, videos, text, graphics, computer-based presentations, etc.).

(4) support interactivity, which is harder to achieve with other forms of DL, because the instructor can see students' reactions and understand to what extent they understood course content. Students can also see both the instructor and the other students and interact with them verbally.

On the other hand, there is anecdotal evidence that educators often use the video teleconferencing to merely lecture, although this conferencing system allows for strong student-student and student-to faculty interaction (Kwok, 2007).

c. Limitations of VTC

Although it has great advantages, VTC has some distinct disadvantages and limitations. According to Motamedi (2001), the limitations and disadvantages of VTC are as follows:

(1) The first limitation is the high start-up equipment cost and the ongoing transmission and personnel costs involved. Although there are low-priced mobile units available, when considering all necessary equipment, cabling, furniture, and other items, the installation of a high-quality VTC-based electronic classroom can exceed $100,000. Transmission costs will vary according to the image quality required, distance, and time of day.

(2) Another disadvantage is the expensive management of the two-way audio and video technology. Cancellation of classes and disrupted lessons may occur due to network connection problems. Sometimes the audio and video signal quality may be poor. Also, high-tech audio and video equipment can be complicated and hard to master, which may cause extra delays in class time.

(3) There is a distinct limit on the number of learners that can be taught by one instructor in a VTC class. Since interactivity and continuous feedback are keys to success in DL, one instructor can interface effectively with only a limited number of learners in one session. The number of learners attending a VTC depends on the type of course delivered. Courses that require intense interaction, like case studies, place a tighter limit on the number of learners than does a lecture type of instruction.

(4) Another VTC disadvantage is related to inadequate instructor training, which leads to poor course preparation for a VTC method of delivery.

(5) Finally, there are usually extra human labor costs involved in providing instruction using VTC. Usually, a technical facilitator is required at both ends of the VTC to facilitate the operation of the high-tech equipment.

2. Elluminate

Elluminate is a company that offers a number of products in live Web conferencing and eLearning for the corporate and academic sectors. Elluminate Live is their specific product for DL in academic institutions. Elluminate Live is an instructor-led environment that delivers real-time, interactive education and supports real learning and collaboration (Elluminate, 2008). For most educational experiences the ability to hear and see the instructor is a key feature (Quinn, 2008). Elluminate offers the ability to communicate using two-way video, audio, and synchronous text. However, the video is very limited due to low bandwidth capabilities. Elluminate users can type, see (a thumbnail picture), and talk in real time among themselves. Required equipment is merely a personal computer that supports the minimum system requirements.

a. Benefits-Advantages of Elluminate

According to Quinn (2008) and Elluminate (2008), there are many advantages of Elluminate as a medium in DL delivery. The description of the key features and their abilities are as follows:

(1) Elluminate utilizes a Collaborative Communication Framework, which makes sure that all participants are in sync. In other words, there is no lag time or garbled communication.

(2) Text chat is offered by Elluminate. Ng (2004, as cited in Kwok, 2007) points out that the handling of participants' communication anxiety is a serious issue that should be considered very carefully. He states that anxiety might occur when there is a delay in replying to students' messages. In Elluminate, participants can exchange typed text with the text chat feature. Although most of the current products do not provide all the features of well-known chat programs, Elluminate incorporates these features (Quinn, 2008). The participants can display the emoticons for laughter, confusion, surprise, a wink, anger and sadness in the "send" area of the chat window. The text chat feature is very useful given the broadband limitations that make video very difficult. Also, if there is an Internet transmission problem caused, for example, by a

thunderstorm, participants can move to text chat with little or no interruption in interaction. With the text chat feature, the instructor can still provide almost immediate responses to students.

(3) Elluminate provides a sidebar chat that allows for private side bar conversations between participants or between a participant and an instructor. This feature is very useful when the student needs to handle personal issues with the instructor without disturbing the other participants (Quinn, 2008). In Elluminate, instructors have the capability to monitor all messages including the private sidebar messages (Quinn, 2008).

(4) Elluminate allows instructors and students to bring in documents that are not in the course text (Elluminate, 2008). For example, during a session the instructor or the students can locate a Website related to their topic and share it with the rest of the class. The ability to show outside content is limitless in Elluminate . Moreover, while the outside content is displayed on their screens, the instructor and the students can still hear and see each other. This feature is very useful for both the instructor and the students. If the instructor has a vast library of relevant videos, reports, and articles, the student can use all these extra materials in their presentations and share them with classmates. Students have the ability to upload their presentations during or prior to class so that every student can log in and view the shared documents.

(5) Whiteboard is another Elluminate feature (Elluminate, 2008). It is like the chalkboard used in a traditional face-to-face class. All participants have the ability to see the writings or postings of the instructor, and can write or post when they are allowed. In Elluminate participants can upload PowerPoint slide shows, copy screens, and paste these into a private work area window that has been set up by the instructor.

(6) Elluminate also has many features that increase participation and reinforce learning. One of those features is called ”polling.” Polling is a participation feature in which the students are surveyed and the results are displayed immediately. There are several forms of polling. In one form, students have the opportunity to display thumbs up or down to illustrate their opinions about the topic. Another form of polling

allows students to give anonymous responses. The advantage of the polling feature is its ability to show class results and, therefore, provide data for class discussion. The polling feature can also be used to test the knowledge of the participants about the topic before and after the class. Such features are useful for gaining students' feedback because all students get an opportunity to answer the questions (Quinn, 2008). However, according to some faculty, answering these types of questions can't tell the instructor whether students really understand the course content or not (Kwok, 2007).

(7) Another feature of Elluminate is the participant list, which is particularly useful for audio and video discussions. It encourages class participation by allowing students to display all sorts of information. For example, in addition to a question mark icon for queuing to ask a question, there is a microphone icon, which tells the participants that there is a conversation going on; they must wait until that icon disappears before another conversation can start. The participant list also allows students to show their emotional reaction to course content (Quinn, 2008).

(8) Instructors can also create breakout rooms for students to encourage more student-to-student interaction (Elluminate, 2008). These breakout rooms are private places where students can talk about their group projects during or outside of class. Instructors can switch between the breakout rooms or observe the work of the student groups at a later date. These rooms can also be created for role playing exercises in practice courses where students can practice certain types of skills (for example, the interaction between a pharmacist and a patient). By using these breakout rooms, students can work together across multiple sites and build a strong online learning community (Quinn, 2008).

(9) Elluminate also allows participants to retrieve the documentations of recently held classes (Elluminate, 2008). This feature is very useful, particularly for students who miss class.

(10) Other useful key features are "Web push" and its ability to be integrated with both open-source alternatives and proprietary course management systems. Web push allows the instructor to conduct synchronized Web tours. For

example, the participants can visit a relevant Website without any network problems. Integration allows for seamless access, which allows users to access recordings and sessions from within the management system, without a second login (Quinn, 2008).

b. Limitations of Elluminate

Elluminate does have some limitations. According to Quinn (2008) one major difficulty, apart from the technical problems, which can turn a potentially enjoyable experience into a nightmare, is the increased bandwidth required by each user when there is an increase in the number of the students participating in the session. Although universities typically have high bandwidth and fast servers, the quality of the session is determined by the student with the slowest connection.

One of the techniques for limiting the bandwidth load is to limit the number of the students who can talk simultaneously. The instructor can adjust the classroom settings of Elluminate to regulate the number of simultaneous students. In addition to the bandwidth issue, monitoring too many people talking in a synchronous DL environment is difficult from a pedagogical perspective. According to Quinn (2008), having up to four students interacting simultaneously is useful only in small group discussions or speaker panels; otherwise, the student who wants to make comments on a subject should raise his hand or join the queue.

A related “fix” is to limit class size in general (Quinn, 2008). A maximum of 15 Elluminate users is recommended to provide full advantage of the video-audio features to the participants.

Finally, a straightforward work-around is to reduce the image quality (Quinn, 2008) or not use the video component at all. This will provide quick and obvious performance enhancements. However, Elluminate allows the instructor to change the image quality of the video, but it does not allow the instructor to change the picture size (Quinn, 2008).

H. FACULTY CONCERNS ABOUT SYNCHRONOUS DL TEACHING

As discussed earlier, institutions have to know their faculty's point of view about the new technologies. Most administrators face organizational, pedagogical, technological, and cultural challenges in helping their institutions transition from traditional to DL environments. However, there is one important issue that faculty administrative leaders must not forget. Faculty perception of and reaction to technological integration is more important than the technological barriers. In other words: "Distance education is fundamentally an academic issue, not a technological one" (Howell et al., 2004).

As discussed in the previous sections, faculty members' points of view vary according to their expectations and level of knowledge about new technologies. If institutions are to involve faculty in their transformation efforts effectively, they must not only align institution goals with faculty rewards that trigger faculty motivations (Howell et al., 2004), but also understand the obstacles and barriers preventing faculty participation and seek to remove or ease them.

This project has already discussed some of the general concerns of faculty while teaching at a distance (e.g., pedagogical and technical training, etc.) and their impact on the successful transition from a face-to-face to a DL environment. The next section explores faculty concerns about DL in more detail.

1. Reward Issues

Studies have found that a top faculty concern about teaching at a distance is that faculty are not compensated enough for the extra work they put into DL (Howell et al., 2004). According to the synchronous DL literature (Howell et al., 2004; National Education Association, 2008), faculty are concerned about reward issues and state that being involved in transformation efforts from traditional to DL environment will not help them attain tenure and promotion. In some cases, even faculty who were hired with technology experience hesitated to become too involved in teaching at a distance because the university offered no formal reward (credit toward tenure or promotion) for their

efforts in the DL courses (Chisholm, 2006). Other studies have supported these faculty concerns; they revealed that teaching at a distance is neither valued nor well rewarded as an academic activity, and not highly related to promotion and tenure decisions. Paulson (2002) echoed these concerns when he stated that not only the promotion and tenure guidelines but also faculty reward structures are among the greatest obstacles to reform.

As noted before, Hagner & Schneebeck (2001) classified faculty members into four groups. They stated that faculty rewards do not impede entrepreneurial or risk-averse faculty from participating in DL instruction. However, they indicated that reward seeking faculty will become involved in DL transformation efforts only if they see an opportunity to advance their professional careers.

In some cases, the main reason for the lack of an appropriate reward system and "release time" for DL faculty is the institution's approach to DL education. The administrators might think that DL is a way to save money, and that it is not much different from traditional face-to-face instruction. When this attitude prevails at a university, faculty teaching at a distance might feel there is a gap in the system between what they do (preparing online courses, adjusting materials for a DL environment, and, finally, delivering DL courses, and the organizational rewards and support for doing it) (Suchan, 2001).

On the other hand, some faculty found teaching at a distance to be rewarding when the instructor experiences satisfaction throughout the process of design and delivery of instruction to experienced students (Conciecao-Runlee, 2001). Some of those faculty stated that they learned much more from their online students than their traditional face-to-face students because the profile of the online students (older, more experienced, highly motivated) had a tremendous influence on how the DL educational experience developed (Conciecao-Runlee, 2001).

2. Work Load and Extra Time Issues

Instructors admit that DL is a lot of work. Experience has shown that delivering a DL course takes at least 50% more work than the traditional face-to-face course (Conciecao-Runlee, 2001). Faculty members, especially ones with little knowledge and

experience in teaching DL courses, worry about the extra time demands necessary to teach successfully in the DL environment. Moreover, many faculty do not think they have enough time to do the academic research expected of them because of DL's additional instructional demands, a dangerous risk for those trying to get promoted and tenured (Howell et al., 2004; Lao & Gonzales, 2005).

According to these faculty, teaching in the DL environment is simply not worth the risk. It also requires extra effort to make lessons user-friendly for DL students, and to communicate with DL students outside of class time (Rogers et al., 2003). In his study, Kwok (2007) suggested that instructors' workload and related stress while teaching at a distance be addressed to make DL instruction less time consuming and psychologically demanding. According to him, these problems can be overcome by limiting the class size or promoting/sharing instructional lessons learned and best practices. Another study conducted by Conciecao-Runlee (2001) stated that the interactions in the DL environment require a lot of work and consume more time because they require "a strong cognitive and affective effort" throughout the delivery of the instruction.

3. Training and Technical Support Issues

Faculty members who do not have much experience and knowledge in teaching DL courses are not certain about their abilities to provide appropriate educational experiences and opportunities, design meaningful interaction, and meet the needs of all their students. The training that the faculty must go through should take the form of a "hands-on" faculty improvement workshop, in which the instructors learn about and experiment with the educational technologies and teaching styles they will be using while teaching at a distance.

Implementing a DL program without adequate training to help faculty make the transition from the traditional classroom environment to the DL environment would mean sacrificing the quality of education (Lao & Gonzales, 2005). Moreover, the learners' willingness to take online courses depends heavily on the instructors' level of expertise in

using the DL environment effectively. Studies have revealed that students who intend to take DL courses take into consideration who will be the instructor for that course (Lao & Gonzales, 2005).

Apart from the need for training in new teaching styles, another challenge for faculty is the lack of expertise in the design and delivery of course materials for distance education environments. As a result, institutions have hired "instructional designers," persons who consult with and train faculty. However, there can still be problems even with instructional designers. First, the products the instructional designers recommend may not be appropriate for teaching at a distance. Second, the training may take place on the wrong day or during the wrong part of the quarter (Chisholm, 2006).

In some cases, technical and technological problems occur when there is a technological gap between the remote sites. It is very hard to have the same quality of discussion when the sites are equipped with different levels of technology. For example, Video teleconferencing requires all remote sites to have the same level of equipment (Picturephone, 2007), operating through a common protocol (Purdue, 2007).

Technical problems can also affect the organization of DL courses. One faculty member stated that the most frustrating thing is the lack of harmony between the message and the technology while teaching at a distance (Rogers et al., 2003). Another stated that stability of the Internet connection/transmission needs to be improved to overcome connection problems (Kwok, 2007). Having technical staff ready to monitor and fix the problems that might occur during the class is essential; otherwise, the instructor has to play the role of the technical expert when something goes wrong with the technology.

4. Other Issues

Chisholm (2006) believed that DL teaching holds the same limitations as traditional face-to-face teaching. She stated that the students still had to meet during the same time frame, just as in a traditional face-to-face course. In addition, she pointed out that only a limited number of students could enroll in her course because having more would have made quality discussion impossible.

In a study conducted by Rogers et al. (2003), one of the faculty interviewed commented on the pedagogical limitations of the DL environment. He stated that it was very hard to make last-minute changes in the course material since he did not have time to let the DL students access the material. He also stated that once he decided that the DL learners could not participate in the discussions as freely as the traditional students, he changed the format of the delivery to lectures instead of the discussion format he most preferred.

In her study, Conciecao-Runlee (2001) found that it was hard to get involved with a conversation, keep the class focused, distinguish between administrative and personal information, and develop a comprehensive discussion when teaching at a distance. She also revealed that reading the emotional tone behind a conversation was challenging. According to a faculty member who participated in her study, when interacting synchronously online, the instructor took more time to respond to the learners for two reasons. First, instructors had to pay attention to two conversations since another message would pop up while the instructor was answering the first one. Second, the instructor did not have a chance to see or hear emotions, voice tone, body language and eye contact in the synchronous text-chat environment.

Chisholm (2006) criticized the current approach to DL teaching. She stated that faculty using commercial course management software become almost invisible. This invisibility may create the perception that the twenty-first century instructor is a nonproprietary and substitutable part in a larger "Automated Education Machine."

I. SUMMARY OF DL LITERATURE OVERVIEW

Aggarwal & Bento (2002) divide learning environments into four groups: face-to-face, lab units, synchronous DL, and asynchronous learning environments. The literature proves that Distance Learning is becoming a major part of the education process, and today many educational institutions adopt Distance Learning as an important part of their educational delivery system.

Not surprisingly, synchronous DL has benefits as well as limitations. Its biggest advantage is that participants can share information with each other regardless of their

location. Other advantages include greater reach of instruction and availability of session recordings for students who miss the class. Some of its disadvantages are time-bound delivery of the courses, ineffective responses due to the lack of instructor social presence, existence of students who choose not to participate, and system compatibility and bandwidth problems.

According to the DL literature, a linear transition of the instruction from the face-to-face environment to the synchronous DL environment is not enough. Researchers stated that smooth transition from the face-to-face environment and teaching effectively in the DL environment require a change in instructional aspects such as lecture delivery style, student interaction and assessment, and role of the instructor.

According to the DL literature, the role of the instructor changes in the DL environment from the source of information to a learning guide. Also, this role change is important in the face-to-face environment, but perhaps becomes more apparent in DL. This change may require new teaching skills as well as the ability to use the DL technology. The acceptance of the transformation from a traditional teaching-learning environment to a distance learning environment varies from instructor to instructor because their expectations of this new environment differ. In order to align DL goals with faculty needs and expectations to achieve a smooth transformation from traditional to DL instruction, institutions have to understand and act on the areas of concern that faculty have toward DL instruction. Specifically, the main concerns of faculty who teach, or are considering teaching, at a distance are lack of rewards, lack of release time, inadequate technical and pedagogical training, and pedagogical-cultural challenges. Once the institutions address these faculty concerns, then the faculty may be more willing to transform existing courses to DL and manage their classes in a much more effective way (Lao & Gonzales, 2005). In the end, the quality of DL courses will improve.

The next chapter discusses the methodology used in this research. Mainly, it will cover the type of interview chosen for this research and the interview questions asked of the participating faculty to gather data.

III. METHODOLOGY

A. DATA COLLECTION

Semi-structured interviews were used to gather information about GSBPP faculty perceptions of the synchronous DL technologies they currently use. Thirteen faculty were interviewed, distributed as equally as possible among faculty ranks (tenure and non-tenure track). Also, faculty were chosen based on their VTC and Elluminate experience.

All thirteen faculty members cooperated in sharing their DL experiences. The interviews, which ranged from 30 to 45 minutes, were conducted between August and October of 2008 at the participants' sites of preference or via phone, with follow-up interviews via e-mail. The next chapter provides detailed demographics of the faculty interviewed.

Upon completion of each interview, the tape-recorded data from the participating faculty were transcribed. When the transcriptions were gathered, faculty responses to similar questions were grouped. Finally, emerging themes and patterns were analyzed based on the DL Systems Model and the Distance Learning literature review.

B. RATIONALE FOR USING SEMI-STRUCTURED INTERVIEWS

Interviews are designed to talk and listen to people in a systematic way to gather data (Kajornboon, 2008). According to Leech (2002), what interviewers already know when conducting interviews is as important as what they want to know, because what they want to know determines which questions they will ask and what they already know determines how they ask them.

In this study, the semi-structured interview technique was used. This technique is different from unstructured interviews because unstructured interviews are more like conversations—where even the topic is subject to change—than interviews (Leech, 2002). Also, in unstructured interviews there is no predetermined list of questions and the interviewee can speak freely on a given topic. On the other hand, in the semi-structured

interviews the researcher has a list of questions to be asked, although their order might change depending on the flow of interview. Semi-structured interviews also differ from structured interviews. In the structured interviews the most important goal is to count how many people fall into predetermined categories on a certain subject. Due to that narrow focus, structured interviews do not allow participants to present in-depth, insider perspective on the subject (Leech, 2002).

In semi-structured interviews, the main purpose is to gain a range of insights on the topic while obtaining specific quantitative and qualitative information from a sample of the population. This type of interview encourages two-way communication because the interviewee can also ask questions of the interviewer. In addition, the information obtained from semi-structured interviews provides not just answers but the reasons for those answers (FAO Corporate Document Repository, 2008). In other words, the two-way communication makes it easier to understand the point of view of the people being interviewed, and to uncover deeper information that may not even have been originally sought by the interview questions.

During the interviews, I used an interview guide, an essential tool that served as a checklist. This ensured that the same questions were asked of all participants (The World Bank Group, 2008). It also made interviewing a number of different people more systematic and comprehensive by limiting the issues to be discussed in the interview (The World Bank Group, 2008).

All the questions presented in the interviews were pre-tested on two faculty members to determine their clarity and accountability for gathering the information needed. These two interviews also helped me to improve my interview techniques and the way I conducted the interviews (e.g., how to ask a follow-up question to gather deeper information about the topic).

During these faculty interviews, the same pre-worded and pre-arranged questions were asked. These questions were also designed to provide an opportunity for the participants to add their comments about improvements that would help them use synchronous DL technologies more effectively.

C. DESCRIPTION OF SEMI-STRUCTURED OPEN-ENDED QUESTIONS ASKED

All the questions asked during the interviews were aligned with this study's research questions. Although explained in the e-mails that were sent to arrange the interviews, the reason for conducting the interviews and the possible outcomes of the study were briefly discussed with each participant at the beginning of the interview. Generally, interviews started by gathering demographic data, and followed with more specific questions. After every question follow-up questions were asked (including more structured questions), if necessary, to cover areas to which the participants did not respond.

All interviews started with the question "What was your general impression of teaching in DL courses? (How do you feel about teaching at a distance?)." The reasoning behind asking this question was to determine each faculty member's general impression about teaching in the DL environment, so that his/her views on DL technologies would become more apparent. Follow up questions were asked to understand:

- The modality's user friendliness
- The instructional methods faculty used in the DL environment (lecture, discussion, small group case discussion, etc.)
- The main reason for using the specific features of the modality (Was the modality good for lecturing or case discussions).

The answers given to this question provided valuable data for the first primary research question.

The second question was "What are the teaching demands of a DL course?" The reasoning behind asking this question and the follow-up questions was to understand differences between DL modalities and traditional methods in terms of additional preparations, class management time, and compensation issues.

The third question asked was "Is teaching students through any or all distance education methods really nothing more than adapting traditional classroom approaches?" With this question, I tried to understand the way the instructors conduct their DL classes.

The interviewee could compare the effectiveness of traditional and new teaching techniques in reaching course goals while using these DL modalities. With the follow-up questions, the author sought to understand the role of the instructor in the DL environment and the depth of the discussions that take place in the DL classes. Also, the follow-up questions aided in understanding the differences in the quality of student-student and student-instructor discussion between two different synchronous DL modalities: Elluminate and VTC. Six faculty members who have taught synchronous DL courses using both VTC and Elluminate provided answers to these questions.

The fourth question was "Have you encountered any problems (e.g., technical, interaction, cultural, pedagogical) when conducting DL courses? If so, what were they and how did you try to solve them?" By answering this question, the interviewees were expected to tell if they, as instructors, encountered initial hiccups in learning to use the system. They were also expected to relate if there was any confusion in using any features. Apart from the technical challenges that the faculty members encountered, they were also expected to describe if they encountered any problems regarding interaction. For example, faculty were asked what is the level of interaction between or within groups? How do they deal with the student who talks too much? Is it easy to follow student-student interaction in the DL environment? How do they encourage shy students to participate in the discussions? Also, with this question the interviewees were expected to tell if they encountered any additional interaction problems: for example, how do they assess students who do not contribute to class or do not do their homework, and do giving exams and quizzes cause a problem?

The fifth question was "Can you describe the support you received or would like to have received before and during your DL teaching experiences?" Along with the follow-up questions, this question aimed to understand the challenges faculty perceive in terms of administrative support. This question was asked to understand at what level—from the instructor's perspective—the administration has supported faculty who teach at a distance. This question was important since it helped in understanding the contribution of two of the four areas in the DL model (administration and technical support). Both of these areas can significantly affect faculty's perceptions of VTE and Elluminate.

The sixth question was “What is the ideal class size for a DL course versus the traditional classroom?” The follow-up question, “Do you have any suggestions for improving the structure of DL courses in the future?” was asked to find the optimal number of sites and the number of students in each site to achieve the most beneficial level of interaction from the perspective of the faculty. The answers to this question also provided different points of view from the faculty members about the configuration of the DL courses (e.g., meeting face-to-face at the beginning of the quarter, visiting the remote sites several times, etc.).

The seventh question was “What will be the impact of teaching using technology on faculty instructional responsibility?” The follow-up questions were “Is teaching in DL, in general, more stressful? Do you feel you are able to meet the same learning goals in the DL environment as face-to-face? Does this create more stress?” These questions were asked to determine if faculty were concerned about their level of expertise in using the technology, and if their level of knowledge about interaction skills was adequate to meet the course goals. Finally, the question tried to gauge the stress level these variables created in the instructor.

The last question was “Please discuss your personal story about teaching online and what you learned from the experience?” This question was asked to cover topics that may not have been disclosed initially by the participants.

The next chapter begins with a description of the faculty members who participated in the study. Then, the challenges they faced while conducting courses in the DL environment and their concerns toward DL technologies are presented. The chapter concludes with analyses of the common themes and concerns that emerged from the interviews.

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IV. DESCRIPTION AND ANALYSIS OF INTERVIEW RESULTS

A. DESCRIPTION OF THE FACULTY INTERVIEWED, THE TYPE OF COURSE THEY TEACH, AND THEIR DL EXPERIENCE

1. Description and Demographics of the Faculty Interviewed

Participating faculty were selected using a purposeful sampling of 13 GSBPP faculty (12 males and one female), based on the following criteria: (1) The proportion of lecturers and professors corresponded to the overall GSBPP lecturer/professor faculty proportion, (2) participants had to teach (or have taught previously) DL courses using VTC and/or Elluminate as delivery media, (3) participating faculty had to be willing to engage in an interview process that also covered e-mail communication.

Table 1. DL Faculty Descriptions, Type of Courses They Teach & Experience Levels

#	Job Title	# of Years in NPS	# of Years in DL	DL Modality They Use(d)	# of Segments They Have Taught in DL	Type of Course They Teach
1	Full Professor A	22	12	VTC	14	discussion-oriented
2	Full Professor B	4	1	VTC	2	lecture-oriented
3	Assoc. Professor A	24	6	VTC	11	lecture-oriented
4	Assoc. Professor B	15	12	VTC Elluminate	23 2	lecture and discussion-oriented
5	Assoc. Professor C	18	10	VTC	12	lecture and discussion-oriented
	Average of Full Prof. & Assoc. Prof.	*16.6*	*8.2*	_	*12.8*	_
6	Assistant Professor A	5	3	VTC	7	discussion-oriented
7	Assistant Professor B	2	2	VTC	4	lecture and discussion-oriented
8	Assistant Professor C	1.5	3	Elluminate	3	discussion-oriented

	Average of Assistant Prof.	*7*	*2.7*	_	*4.7*	_
9	Senior Lecturer A	13	7	VTC Elluminate	15 1	lecture and discussion-oriented
10	Senior Lecturer B	15	8	VTC Elluminate	64 4	lecture-oriented
11	Senior Lecturer C	8	8	VTC Elluminate	20 4	lecture and discussion-oriented
12	Senior Lecturer D	11	11	VTC Elluminate	65 5	lecture and discussion-oriented
13	Lecturer A	9	5	VTC Elluminate	100 1	discussion-oriented
	Average of Senior Lecturers & Lecturers	11.2	7.8	_	55.8	
	Overall Averages	*11.6*	*1.4*	_	*24.4*	

2. Background and Experience Level of Faculty

Nine of the participants held doctoral degrees, while four held master's degrees. The ranks of the participants varied from lecturers to full professors. There were two full-time professors, three Associate Professors, three Assistant Professors and five Senior Lecturers and Lecturers. All of these participants had been teaching in NPS from 1.5 years to 24 years and involved in Distance Learning from 1 year to 12 years. Among the faculty members, six used only VTC as a delivery medium, one used only Elluminate as a delivery medium, and the rest used both VTC and Elluminate as delivery media. The mean number of segments that they had taught in the DL environment was 24.

3. Faculty Instructional Methods

All faculty described the methods they used to teach their DL courses. These methods ranged from more lecture-oriented courses (Acquisition Management, Financial Management, Economics, Operations and Logistic Management) to more discussion-oriented courses like Organization and Management. Nine faculty members taught more

lecture-oriented courses and four faculty members taught more discussion-oriented courses. Among the nine faculty members who taught more lecture-oriented courses, there were only three faculty who stated that their courses were purely lecture-oriented. The other six faculty stated that they rolled lecture and discussion together. They stated that while they are delivering the course content to the students they also welcome any input coming from students based on their experiences and then discussing those experiences. They added that their courses and classes often use exercises.

Some of the faculty who teach pure lecture-oriented courses explained they did so because their courses needed to be more structured. A senior lecturer who had taught more than sixty DL segments commented:

> We have this listed objectives six pages long that we have to certify that they have learned in order to give them their DAU certificates so that they can qualify for acquisition jobs and so we are putting out a great deal of information. I mean, my first two tests are vocabulary tests…students make up flash cards and they have their wives practice with them because they are learning a whole new language of acronyms of the way people talk in the Pentagon. You cannot be a player if you can't speak the language.

On the other hand, all three faculty who were teaching/had taught pure lecture-oriented DL courses commented that, while they were delivering the course content to their DL students, they left room for discussion to help the students to think and apply the knowledge taught to them. An Associate Professor with six years of DL experience who teaches economics courses stated:

> …[My courses] are lecture-oriented but I leave room [for discussion] because I know people will get interested in things…So I am ready to answer questions or if it is a question I don't want to answer right away but I want other people to try [then] we have a discussion about it…

B. GENERAL IMPRESSION OF TEACHING DISTANCE LEARNING COURSES, AND ADVANTAGES OF DL ENVIRONMENT ACCORDING TO DL FACULTY

1. General Impression of Teaching DL Courses

All faculty stated their general impressions about teaching in the DL environment and their perceptions of these new technologies. All agreed that the DL environment lacks the convenience of teaching in the traditional classroom setting: having all the students together in one place, and interacting with them by looking them in the eye. Some of their comments are listed below:

> It is never as convenient as teaching inside a classroom and having all the students together.

> I'd say both [technologies] are usable; neither are as good as being in residence…[getting discussion going is] much more difficult to do than in a resident setting where you've got everybody all together in the same room, and it's much easier to interact [in resident courses].

> Nothing is good about it. It is all bad…but that is less bad then I thought… in other words if I could choose I would be in front of the class…everything works better in front of the class.

> Two faculty described DL as 'the second best thing' for the same reasons:

> My general impression is you can do it, but it isn't much fun…I think a lot of people have an attitude that it is a second rate education. That you just don't get as good of an education. I think that is probably true among DL programs.

> It is a little harder…The first choice being resident and third choice being not taking anything. It is the next best thing.

On the other hand, twelve faculty stated that they are still willing to teach in the DL environment despite the technical and pedagogical limitations. They stated that DL has advantages, all of which will be explained in detail in the next section. They also

stated that the more time spent in the DL environment, the easier it becomes to use the technology associated with DL. A faculty member who has taught more than 16 DL courses commented on this issue:

> I have enjoyed teaching distance learning even though I think I understand even some of the imperfections.

However, one faculty member approached this issue in a different way:

> The thing is different teachers have different personalities as well. Like as I mentioned, I like the interaction. Someone who does lectures, they will have different issues. So what I will say is I don't think it would be bad if they just took volunteers because then some people would prefer to do that and some people would prefer to do resident and then if they have a shortage of volunteers, then obviously you have to up the compensation just like anything else. But if they get enough takes voluntarily at the same credit, then that is an approach they can do.

Apart from their impressions about teaching at a distance, three faculty members shared their observations about some faculty members' current resistance toward teaching at a distance. They stated that those 'reluctants' who do not want to expand their teaching with the help of the current technologies are among the older faculty who have their own reasons for not changing their way of instruction. Two of these faculty members, who have been in the DL environment for 12 years, stated:

> I know other faculty members who won't touch a DL course with a ten foot poll…there is resistance in the business school to DL and it is primarily among the older faculty...so there is some faculty who really feel that way that the only way of worth teaching is face-to-face instruction.

> Some people just like face-to-face. That's how they were taught and so they think that's really the only way to teach, or the most effective way to teach, so they're just not interested in doing some sort of Distant Learning course.

A senior lecturer who had taught more than 70 DL courses and had been in the DL environment for more than 11 years added that those faculty members who are opposed to DL in general, and Elluminate in particular, have neither experienced Elluminate nor even attempted to learn anything about its underlying technology.

> It has been really interesting: most of the instructors here that I have encountered, who don't like the idea of Elluminate, have never tried it.

All of the participating faculty members shared their experiences in DL and stated that DL needs different instructional techniques from traditional face-to-face teaching. They also commented on how to be a successful DL instructor and the level of stress that DL creates on faculty.

a. Need for Different Teaching Techniques and Skills

All the participating faculty agreed that using VTC and Elluminate as delivery media required different instructional skills compared to the face-to-face environment. They stated that it took significant adaptation to teach in the DL environment since DL lacks the traditional interaction cues of classroom settings. Examples of this adaptation can be found in the comments of a DL instructor who had taught more than 12 DL courses using VTC as a delivery medium:

> If you are the kind of faculty member who likes to use small group discussion, and/or interaction in the classroom, and you make that work really well, you have a problem when you go to do it in a VTC because you are not in the same room with those people. And those people are not necessarily organized or organizable into those same small groups; the logistics are different.

Some instructors stated that the level of engagement is also another limitation for instructors if they try to adapt the same teaching techniques they use in the traditional face-to-face environment to DL. Two of the participants told about how they had to 'cold call' the DL students to start a discussion, whereas they could start a discussion easily in a residence course by just asking questions to the whole class in general and getting immediate answers. A full professor with 12 years experience in DL stated:

> …like in the residential class you can pose a question and wait for people to respond and people will and because it is face-to-face you can do things to make sure that they are going to respond too. In the DL environment until people get very comfortable with you, you have to cold call on people.

Moreover, a lecturer with five years of DL experience stated that even two DL technologies, VTC and Elluminate, required adaptation of different instructional skills since the two media differed from each other in terms of features that the instructor uses while teaching at a distance.

> It is more than adapting traditional skills. It is identifying particular skills that the instructor needs and they are different on those. Different in VTC different in Elluminate.

However, an Assistant Professor who taught discussion-oriented courses in the DL environment stated that he tried to deliver the DL course in the same way that he delivered the residence equivalent of the course. He added that it was the best way to teach discussion-oriented courses and that students learn more in that way. He said that in both courses, DL and residence, he perceived his role as 'the conductor of the orchestra'.

b. Important Aspects to be a Good DL Instructor

All 13 DL instructors commented on the particular characteristics instructors should have if they want to be successful in the DL environment. They stated that to be successful in the DL environment the instructor should first be willing to use new technologies and be open to new ways of teaching. They added that the instructor should also be flexible and realize the limitations of the DL environment. Finally, they indicated that the instructor should plan and manage his/her time very carefully and must have more understanding and empathy with the students. An associate professor who had taught more than 12 DL courses commented on the characteristics of a successful DL instructor:

> You have to be willing to work with technology and be very patient and willing to adapt new technologies and new approaches. You have to accept the fact that there are going to be technical glitches. You have to be innovative.

A senior lecturer, who had used both Elluminate and VTC as delivery media for more than 16 DL courses, added that to be successful in the DL environment, the instructor should also realize the opportunities of DL and take advantage of them:

> I guess I should also say that part of being a successful instructor with DL is just taking advantage of the opportunities that you have. In some cases, for example, thread or discussion. Thread or discussion may be better than face-to-face communication. It may be better because the students that are involved in a thread or discussion and have to think more about what they say. Each of the media provides different advantages and disadvantages. You have to learn to take advantage of those and to understand what may not work well in a particular medium.

2. Advantages of DL Environment and DL Modalities (VTC and Elluminate) According to Faculty

a. Opportunity to Reach Remote Students

All the instructors commented that they see DL as a valuable opportunity to reach the students in multiple locations who would never have the chance to come to the NPS and earn a degree. They stated that the DL students really appreciate this education. A full professor with 12 years of experience in DL commented:

> Actually, I enjoyed the DL courses a lot and one of the reasons why is it provides me with an opportunity to teach what I do to people who would never have an opportunity to learn that because it is impossible for them to come to the NPS…So I see DL as an opportunity to kind of extend my reach of instruction.

An Associate Professor who had taught courses using VTC and Elluminate to over 25 DL segments commented on the same issue:

> I think the thing that has been most significant to me about teaching DL is that recognition that not all students can come here to NPS. Some students by virtue of their job situation, family situation, personal situation, whatever—they cannot come here to NPS.

A senior lecturer who had used VTC and Elluminate as delivery media had the same beliefs about student access:

> I do [enjoy teaching in the DL environment]. I don't mind the DL. It is not as personal as face-to-face with students, but the reason I like it is the ability to access students who can't come here. And so I really like that part of it.

b. Value of Having Experienced Students

While discussing this valuable opportunity provided to DL students, eight of the instructors also commented on the experience level of these DL students. An experienced DL instructor who had been at NPS for more than 22 years stated that another reason he liked teaching at a distance is having professionals who would put into practice whatever they learn in the DL class and provide feedback to the instructor as to whether it works or not. A senior lecturer who had taught more than 70 DL segments in GSBPP stated that he almost preferred to teach DL because he found it to be satisfying, since DL students made their own choice to be enrolled in these classes. He added that DL students who were working professionals were more eager to learn since they knew that it would help them in their current jobs and enhance their promotion potential. The following faculty comments add additional support to the importance of DL students' experience levels:

An associate professor who had used VTC technology for more than six years commented:

> You get people who more want to be there. They made the choice and so you get more interest.

An assistant professor who had used VTC technology for more than three years believed that:

> The quality of the students in the VTC program are generally very good. I will say that my experience in general is that the students have probably been better in VTC and that is taking into account they definitely don't commit as much time to prep and they are still trying to do their jobs and all of that stuff. So in general, I have been very impressed by the VTC. There is more variation actually. There is quite a lot of variation.

A senior lecturer who had been in DL environment for more than 11 years stated:

> I think we get quality discussions because the students on the Elluminate sites are practitioners; they have a lot of experience in there. So I think the quality of the discussions is sometimes higher than what we get with residency here, because of their background in the subject matter.

A senior lecturer who had taught more than 16 segments in DL environment commented:

> We get a very interesting mix of students that have wonderful backgrounds and would not be our students otherwise.

c. Benefits and Advantages of VTC When It is Compared with Elluminate and Face-to-Face Teaching

Even though all participants stated that the most effective way of teaching is the face-to-face environment, they also stated that VTC had some advantages over face-to-face and Elluminate. In fact, an associate professor who had taught more than 11 DL segments stated that he had imported some of the techniques that he had used in his VTC classes into his resident classes. He stated that he would give the DL students study questions to lead them through the readings so they clearly understood what they had to focus on while they were reading. This technique proved so helpful he imported it into his resident courses. Another associate professor, who had taught more than 7 VTC courses that were more discussion-oriented, told about how VTC contributed to his self-improvement as an instructor:

> I would say the biggest learning is seeing yourself on a camera and thinking about how you look and talk. That in many ways is also a very humbling experience. So the real learning would probably be that more than residential…In DL, you really have to focus on teaching technique and you have to be strong on teaching technique if you are going to do well. In resident class you can often get away with a lot of stuff, but in a DL class, you have to be really good basically on teaching technique. When you see yourself on video and if you watch yourself afterwards. So I think that is what it gets you to learn... It has caused me to think a lot more about how I teach. It is not necessarily good, but it has forced me to think about how I could improve how I teach. Not the content. Just how I manage the interaction of the students and what I am trying to do to make that go better.

Moreover, an associate professor who had taught 12 segments using VTC observed that though faculty often did not plan as carefully for the entire residential class quarter, a faculty member who put a course into a VTC model became very conscious of what he/she was teaching and why he/she was teaching it.

The faculty also commented about how video clips worked well in covering a certain part of class material in VTC classes and that there was a relative advantage of using more video in VTC classes than in resident classes. Another faculty member who used VTC and Elluminate stated that the biggest advantage of VTC over other means was the fact that most of the time he could at least see the other students.

Finally, all six faculty who use VTC and Elluminate commented on their learning curves of using these technologies effectively. Also, three faculty specifically compared VTC and Elluminate in terms of their relative learning curves. These three faculty said that Elluminate has a steep learning curve. They added that the VTC learning curve was less steep than that of Elluminate's, and that instructors did not go for too many 'bells and whistles'. In other words, the instructor did not have to learn too many complicated features of the VTC technology compared to Elluminate. A senior lecturer who taught lecture-oriented courses in the DL environment for more than 8 years gave an example:

> Hands on training in VTC consisted of about a five-minute orientation. Plus it is intuitive though…If you want a student camera, you push the student camera, if you want the computer you push on computer. You do not have to go through this labor of rich full of loading stuff [like in Elluminate]. [If] you want the next slide you click, you do not have to go up to find the arrow [and] move it all the way [like] you do in Elluminate.

Another senior lecturer who taught more lecture-oriented courses commented on the stress level DL created in him while teaching at a distance. He indicated that the learning curve of the technology, especially in Elluminate, is one of the reasons for this stress:

> Well, that's [feeling stressed] one of the learning curve things. I can tell you for a fact that I just, you know, when you—didn't have it in, it didn't have it in, in VTC, at least not after very quickly. But, you know, I used to say, "Oh…I've got to go, I've got to go teach Elluminate…" the first term I taught Elluminate, "…I've got to go teach Elluminate today; I'm not even sure I can log on!" So, that's gotten a lot less stressful, as I've moved down the learning curve. And once you have some confidence in, in the medium and, and what you can do with it, and understand the limitations of what you can do with it, quite frankly, then the stress level goes down accordingly.

The third faculty member, who stated that the VTC learning curve was less steep than that of Elluminate's, was a lecturer who taught discussion-oriented courses.

d. Benefits and Advantages of Elluminate When It is Compared with VTC and Face-to-Face Teaching

The faculty members, once again, stated that although Elluminate was not as effective as teaching resident students, Elluminate had some features that, in their opinions, made it more powerful than VTC.

A senior lecturer with eight years of DL experience stated that data rates were higher in Elluminate, which made the images clearer. He added that Elluminate also improved the interaction with a number of features (raising and lowering hands, polling the class, text messaging, etc.) that are integrated into the technology. Another senior lecturer who had taught 15 VTC courses and 1 Elluminate course commented on the useful features of Elluminate:

> In Elluminate, typically the students are not able to see one another, but on the other hand they have a chat function and may feel very comfortable typing messages back and forth to one another. I don't think that there is an overwhelming impairment to having a good discussion with Elluminate. Chat sessions can be set up so that they can in fact actually put things out there on the screen so that we are all looking at the same question or briefing chart or whatever.

An associate professor with 12 years of DL experience told about how useful the chat function was to encourage participation:

> For the student who doesn't talk very much in VTC, you pretty much have to call on the student and ask the student to respond to the question or make a comment. On Elluminate students all have access to the chat feature, so a student doesn't have to speak in order to make a comment. They can actually ask a question or make a comment in the chat feature. I think that feature has the benefit of encouraging students to participate who don't want to talk.

Another senior lecturer made a comment on how useful the features of Elluminate were when compared to VTC:

> …what you can do with materials is much better than VTC. For instance, if I want to use and actually watch a student use a spreadsheet, I can do that on Elluminate. So, I can make a spreadsheet with some parameters, I can turn it over to the student, and all the students, and I can watch what they are doing: how they are putting in numbers, how they are making their model work. So, the use of the computer-based tools on Elluminate is very good.

The faculty also stated that it was very easy to understand the contribution level of each student since Elluminate keeps a complete record of individual contribution. A senior lecturer with more than 11 years of DL experience stated that he could find out quickly who was contributing or not and tell the students "you need to contribute more; you are falling behind your contemporaries in contribution." He then added that the students got it and started contributing more. He also stated that accountability was very good in Elluminate. He said that when a student wanted to join the discussion or raise a question, he knew exactly who it was and could call on him/her by name. The instructor said that he could more easily associate a voice with a name in Elluminate than in VTC.

An associate professor who had taught over 25 DL courses stated that Elluminate incorporates many features that are not found in VTC. He said that the instructor had to go out of the existing VTC system to, for example, deliver handouts to his/her students to work on during that class. He stated that the only way for the instructor to give a document in real time is to fax the document or send it via email so that students can have the document and begin working on it immediately. He added that, in that sense, Elluminate had some advantages over VTC since it had been developed specifically as a teaching tool. He finally stated that Elluminate had the ability to support a large number of DL students taking classes from multiple locations over the Internet without having to go to an expensive VTC facility. The professor noted how useful this was, since he could teach even from a hotel room when participating in a conference from a different city.

After sharing their general impressions and perceptions of the advantages of these two DL modalities, faculty also voiced their concerns about these two technologies and commented on their drawbacks.

C. DESCRIPTION OF COMMON CONCERNS OF THE FACULTY WHO TEACH AT A DISTANCE USING VTC AND ELLUMINATE TECHNOLOGY AS DELIVERY MEDIA

The 13 faculty interviewed voiced some common concerns about these two technologies. Specifically, faculty felt that DL teaching and preparation is extremely time consuming and suffers from some pedagogical, technological, and cultural limitations. These factors are discussed in the next sections.

1. Reward Issues

All participating faculty commented on the compensation that had been given to the DL faculty so far. They noted that they received 1.5 credits for teaching a one-hour DL course, vice one credit per hour for traditional courses. So, DL faculty members earn 50% more credit per course than their residential faculty counterparts.

The faculty members interviewed defended this extra compensation as necessary, given the demands of the instructional media. Five out of six instructors who used VTC technology, one faculty member who used only Elluminate, and five out of six instructors who used both VTC and Elluminate stated that there was a need for extra compensation for faculty who teach DL courses. They cited the extra workload of teaching from a distance as one of the most important reasons for extra compensation, which is discussed in more detail in the next section. They stated that not only did the email load, preparation time, grading, etc. create extra work in the DL environment, but the travel also added extra work. An example of this added work can be found in the comments of an associate professor who had been teaching in the DL environment (using VTC technology) for more than six years:

> I think [faculty should get extra compensation] and the reason is the travel. If it were not the travel I would say no but the travel is extra work, it's days of extra work.

A senior lecturer who had taught using both VTC and Elluminate commented on the same issue:

> Absolutely [faculty should receive extra compensation]. [If] you do your job, you are going to travel, [but] when you are going to travel? You are going to travel on the weekend because many of the VTC classes the students go to alternate work schedules and they work 10 hours a day for four days and they have classes either on Friday or on Monday. So you end up coming home on Saturday or you end up flying out on Sunday.

Among these five VTC user faculty who thought that faculty should get extra compensation, there was only one faculty member who felt that 50% added compensation was insufficient; among the six Elluminate users, there was likewise only one member who thought that the added compensation was too low. These two unsatisfied faculty pointed out that since the workload was twice as much, the faculty should get twice as much in return. The rest of the faculty (four VTC and five Elluminate users) expressed their belief that either 1.5 was enough or that it should be somewhere between 1 and 1.5.

There were only two instructors who thought that there was no need for extra compensation in DL. They stated that DL was part of their job and should have been shared among all faculty, so everybody was expected to do his/her share of DL. In other words, they saw no need to incentivize Distance Learning work with additional compensation.

All 13 participants commented on whether the faculty should receive compensation more than 1.5 for the first several DL courses they teach. Some of the faculty (three VTC users and two joint Elluminate/VTC users) stated that there was no need to provide more compensation other than the 1.5 credits for the first several times that instructors taught DL courses. They stated that the residence courses and DL courses were alike in terms of first-time teaching. And that if there is a learning curve then it should apply to the residence courses as well. These faculty added that DL was part of their job, and as instructors they had to maintain knowledge and skills in the latest pedagogical resources.

Seven faculty who felt compensation for the first few DL courses taught should be a bit higher than the 50% DL premium stated that giving a little more compensation would attract more people to teach in a new medium. They added that DL was much more difficult for a faculty member who was working with it for the first time. Finally,

they said that DL demanded more preparation time until the faculty got familiar with the technology. Among these seven faculty members were three who added that compensation greater than the current 50% premium for new DL instructors should not be decreased after several DL courses. An assistant professor who had taught more than 3 segments commented:

> Here is the problem with that: It assumes the bulk of the work happens [the] first time you teach the class and I think that at least the way I teach …it is not less work the second or third time that I teach it and so I think that if I am saying [we] will give someone a little extra money [the] first time but then not give them extra money the rest of the time it is just kind of…it is a misunderstanding of what the workload is like for the faculty who teach [at a distance]

Another faculty member, who taught more discussion-oriented courses, provided another reason for the extra compensation. He said that, for the first several courses taught, the teacher should receive extra compensation since the DL classes lack the 'energy' that the faculty received in residence classes. In other words, the level of interaction and level of communication were not satisfactory in the DL environment, and lead to a 'psychological deficit'. This faculty member thinks that being compensated a little bit more for the first several times would be a good incentive for the faculty. Additional comments from faculty who thought that faculty should have received more compensation than 50% for the first several DL courses are listed below:

> As a practical matter people will accept new ideas if their company has incentive structures. I think that makes it maybe useful to attract people to teach in a new medium. You can make the argument too that maybe things have to be rearranged and changed.

> …for the first time for a particular course if it is the first time teaching that course. Give a little extra for the preparation.

However, a senior lecturer faculty with eight years DL experience, who used VTC and Elluminate technology, stated that he would not feel guilty if he received extra compensation for Elluminate for the first several times because according to him, Elluminate is not user friendly and the learning curve of Elluminate is steeper than that of

VTCs. That is why he added that he would feel guilty if they gave him extra compensation for VTC for the first several times he taught DL.

2. Work Load and Extra Time Issues

a. Reasons for the Workload

Twelve out of thirteen participants raised concerns about the heavy workload they had while they were teaching at a distance. They said that whenever a new technology came on the scene, the instructor was required not only to learn that technology but also to keep track of all advances in the technology, resulting in a significant demand on the instructor's time. According to these faculty members, another reason why DL required more of an instructor's time was because DL lacked the convenience of the traditional teaching-learning environment in which communication with the students was easier and instantaneous. For example, an assistant professor who had taught VTC courses and an assistant professor who had taught only Elluminate courses stated that some conversations with the students that could not be held via email were held via telephone outside of the designated office hours, and this took more time. Another example of this issue can be found in the comments of an associate professor who had taught DL courses using both VTC and Elluminate:

> If I teach a resident course I can talk with students; they can ask me a question; they can stop me after class...they can come stop by my office and talk. For the Distance Learning students it all has to be done via phone or email and, necessarily, that takes more time. It takes more time to write an email message and have that email conversation than it is just to have a face-to-face conversation.

Traveling to the remote sites was another issue, as this requires more of an instructor's time. Apart from time spent traveling, these 12 faculty members stated that grading DL exams also required more time. According to these faculty members, the entire exam process (setting up proctors if needed, delivering the exams, receiving the exams and finally grading them, together with the email load and learning curve) took between 25% and 50% more of instructor's time in DL. In fact, there was only one

instructor, a senior lecturer with significant DL experience who stated that DL requires only 25% more work. All other eleven faculty stated that DL took at least 50% more of instructor's time. An associate professor who had taught more than four DL courses said that:

> As far as when papers are turned in, it takes them longer to do that. If they email their papers, it really takes a lot of time to print them out. It isn't like it is [with] the resident and I say okay, on Tuesday the papers are due and everyone hands in their paper. I have spent literally six to eight hours printing papers out when they turn in a problem set. That is before grading. That is a real problem.

According to 10 out of these 12 faculty members who stated that DL requires more work, planning and preparation for a DL course takes more time as well. A full professor commented on this issue:

> …you are constantly having to be providing different ways of teaching…[thinking about using] different teaching techniques in the DL environment. So it takes more time to prepare for the DL class.

Among these 12 faculty members, a full professor and an associate professor who used VTC stated that DL required more time only at the start, but that later the instructor got used to teaching DL. Consequently, extra work only occurred the first several times one taught DL. An associate professor who has taught over 25 DL courses commented:

> I would say that when you first start doing it, it is more time consuming than the traditional classroom teaching. After you get used to it, it is roughly the same.

However, among these 13 faculty members there was only one faculty member who stated that DL did not require extra work at any time. An assistant professor who has taught seven courses using VTC technology stated that apart from the email load, his DL courses required less work in terms of preparation. He stated:

> Personally the way I structure my class, I tend to introduce new material while I am teaching in the spring when I teach retro programs and I teach the same material or the same cases more or less in the fall as I teach in the spring. So by the time I have taught them in the spring, if there are

> new ones I have learned them. So for me, I probably do less prep in the fall teaching DL than I do in the spring. So in terms of preparation for a class, it probably takes me less time, but that is a function of how I have chosen to structure my classes.

b. Workload Related Stress

Five out of six faculty who used only VTC, one faculty member who used only Elluminate, and five out of six faculty who use VTC and Elluminate stated that teaching at a distance created some degree of additional stress. The causes of this stress were the need for more preparation time for a three-hour DL course, and cognitive workload (managing technology and managing students at the multiple locations at the same time) during class. They also stated that technological problems created some stress, which is discussed in the following section in detail. An associate professor using VTC for six years commented:

> I feel [a] little more [stress] and the reason is…it is three hours instead of the usual one or two hours here and so you've got to be more prepared.

A full professor included the anxiety of falling behind the other faculty work area responsibilities as another reason for the stress:

> So when you are in a quarter teaching, your whole [professional] life is not in that quarter just teaching, there is all kinds of administrative stuff that you are doing, research sponsors [to attend to], so anytime something takes more time—sucks time from you—it's going to stress you in other areas of work that you need to be doing [so] that you are feeling [you need] to be catching up all the time or you are behind in your other work.

On the other hand, an associate professor, using VTC and Elluminate technology and with more than 12 years of DL experience, stated that DL did not create any added stress for him. He reasoned that his stress level depended on many variables, most of which exist equally in a resident course:

> Not on me. I don't know, I think it depends on the course, it depends on the number of students, and it depends on a lot of different things. I could have a large group of resident students that might be more stressful than a smaller group of non-resident students. Now, if I had a more advanced course that I was teaching 2 acquisition professionals using some DL

> technology, that might be much easier just because they're more interested in the material and they would be willing to engage, and I would have a more of a connection with them. So, I don't think you can say that, necessarily, one is more stressful.

Also, a full professor using VTC with one year of DL experience stated that the stress level DL created for him was no different than the resident courses. These two professors were the same professors who stated that there was no need for extra compensation.

3. Technological Problems and Training and Technological Support

All participating faculty members stated that they had encountered some technological problems while they were using VTC and/or Elluminate technology.

a. Technological Problems in VTC

All 12 VTC users raised concerns about the technological problems they had encountered while teaching using VTC. They stated that they had experienced many interrupted classes when a site would be going through a bridge to get to NPS, causing one or more sites to drop off. As a result, communications would drop out and the sites that lost the connection could not get back on again during the class. Some of the other problems they encountered were degradation of video quality and video-audio lag. A senior lecturer with eight years of DL experience stated that the problem was with the data transmission rate (184 kilobytes per second). He stated that the transmission rate resulted in poor video quality and added that poor video quality resulted in the loss of facial expressions. In some cases, the instructor could not even see the students at the remote site and, therefore, could not determine if they understood the subject matter. The faculty member also said that because of the audio lag students sometimes talked over each other, forcing the instructor to start over again. A senior lecturer with five years of DL experience stated:

> …in VTC there is a lag. There is an audio lag. What that means is if I want to question what some other group said, I have to interrupt, so there is a technological lag which means if we are going to discuss [the idea] it is a little more awkward because I may have to interrupt you.

Nine out of 12 instructors who used VTC and/or Elluminate technology also stated that quality of the equipment and the setup of the VTC rooms at the remote sites caused problems that negatively affected interaction. According to these faculty, lack of decent equipment at the remote sites decreased their level of satisfaction with VTC classes. A senior lecturer who had taught over 70 DL courses commented:

> Many of the VTC sites have older, less capable equipment and they get knocked off air…In some of the rooms the equipment is dark…I mean the images are there but it is like they turned the brightness all the way down.

b. Technological Problems in Elluminate

All seven participating faculty who had used both VTC and/or Elluminate talked about the problems they faced while using Elluminate. Bandwidth limitations were a common concern among these faculty. Five of the instructors stated that they did not use webcams during their DL classes since that took up too much bandwidth. The rest of the instructors stated that they turn off their cameras after a few minutes for the same reason.

Another DL instructor provided another reason for not using webcams. He stated that most of his students were not allowed to attach webcams to their computers while on base due to the security reasons.

Two of the instructors said that sometimes the remote sites' firewall settings created technical problems. An associate professor stated that he had problems when he had students connecting through NMCI (Navy Marine Corps Internet). He stated that the students would drop off and could not come back on. A senior lecturer with more than 11 years of DL experience stated that when he wanted to show a video from the web, he encountered some problems resulting from the remote firewall. He said that the

students could not view those videos. On the other hand, he added that he solved the problem after talking with the security chief before his classes.

Another senior lecturer who had taught five Elluminate courses stated that the biggest problem he had faced had to do with video tapes. He stated that the tapes were recorded digitally to the server and he could go to that URL and play the tape. However, the technology did not allow him to play half of the video in one class and the other half in another class. He stated that he had to play it from the beginning to the end, without any breaks.

Finally, all the instructors stated that although there were some start-up problems with Elluminate, the technology would improve and become more reliable.

c. Technological Problems Create Stress

As indicated earlier, five out of six faculty who used only VTC, one faculty member who used only Elluminate, and five out of six faculty who used both VTC and Elluminate as delivery media commented on the level of stress DL created for them. They agreed that, apart from the workload issue, technological problems added to this stress.

A senior lecturer using both VTC and Elluminate commented on this issue:

> It is more stressful because of time and because it takes longer to learn the students and you have this technology hanging over you, [and you think,] "am I going to screw up?"

Among the 11 faculty who stated that DL created stress for them, there was a senior lecturer using both VTC and Elluminate who stated that while VTC did not create stress, Elluminate did. According to him, the reason was the technological problems he had had with the medium: "I've got to go teach Elluminate today; I'm not even sure I can log on!" On the other hand, he stated that, once the instructor gains confidence in the media and realizes what he/she can and cannot do with it, the stress level goes down accordingly.

d. Training Issues

Eleven out of 13 participating faculty stated that they found training support to be more than adequate. They stated that the VTC staff did an excellent job of supporting them, both in hands-on training and fixing technical problems. They also stated that they had received hands-on training in Elluminate. They believed that NPS had done a great job on the resourcing side, and added that the support staff made all the equipment available to them, answered any questions they had and, if necessary, sat in the first class to make sure they didn't have any problems with the technology. However, a full professor with 12 years of DL experience stated that there had not been enough support from OCL (Office of Continuous Learning) for synchronous DL, particularly for VTC. He indicated that there was no support for him to understand how to adapt his teaching techniques to this new environment. On the other hand, he stated that the technical support during his DL classes was good. His comments on the issue are below:

> Here is what was lacking: there was nothing in place to help me to figure out how to change how I taught in the DL environment… We have an Office of Continuous Learning (OCL) and they really didn't provide the kind of understanding needed to teach in the VTC environment. That support was needed because the focus at that time was on asynchronous instruction…and VTC was a poor stepchild.

An assistant professor who had taught more than four courses in DL and another assistant professor with three years of experience in the DL environment stated that they did not have formal training except for a brief description of what the tools were for. They added that they had to learn the technology by themselves.

e. Technological Support

Twelve out of thirteen faculty stated that they found technological support more than adequate. An associate professor who had taught more than 12 segments using VTC stated:

> And I didn't have as much of a churning in my gut at the end because I knew there were good people that would make sure that everything was hooked up. I mean there were times, I can remember when I was lecturing,

> and then something would go wrong, and I could tell that something was wrong and I would say, "excuse me, ladies and gentlemen, I have to go next door here and get some help because something isn't working." And then I would walk over and talk to Mr. Xy who is over there, and I'd say, "Mr. Xy, I can't get the camera to work" or something, or I've lost the site can you get it up? And he'd work it.

On the other hand, an assistant professor who had taught Elluminate courses for more than three segments stated that the tech staff did 'not bother themselves to look through how the Mac platform was affected by the system upgrades.' The assistant professor added that this problem resulted in the cancellation of three hours of class, which is a serious loss of time in the DL environment. The same instructor also added that there was no support through the Elluminate Web site other than frequently asked questions. She stated that:

> They [technical support staff] sometimes were limited in terms of how quickly they can respond and sometimes I felt like I did not have designated Elluminate support. Because Mr. Xy does a lot of other things and so I felt like there needed to be a designated Elluminate support and that Elluminate itself as a company, or whatever they are, that they need to have better support available where I, the instructor, can contact them directly and take out the middleman. Because otherwise I contact Mr. Xy, Mr. Xy contacts them and then Mr. Xy gets back to me and that is just inefficient. Especially when I am having a major problem like I can not get online…[so] I had to cancel class.

4. Other Issues

a. Cultural Problems

The participants also raised their concerns about cultural problems they had encountered while using VTC and Elluminate. The common concerns were low attendance rates and side conversations at the remote sites that were unrelated to the class topic.

An assistant professor with three years of DL experience stated that ensuring attendance was not as easy as it was in resident classes:

> The old people tend to drop in and out of the course more. Some of them have more of a drop-in mentality. 'Oh, yeah, my boss told me I have to fly that week. Sorry. I can't come to class.' We usually have more of those problems. Attendance is more spotty. If you wanted everyone to be there, it would be harder to do in DL because you can't walk up to them and tap them on the shoulder and say 'hey, where were you last week? You owe me a write up or you owe me this or whatever.' In DL they are miles away so it is really difficult for you to do that.

However, some of the faculty stated that one factor for the lower attendance rate was the attitude of the students' superior officers, who often tasked the students with requirements that interfered with their learning. Although the faculty acknowledged that the DL students were working full time, they thought that students should not be interrupted while they were enrolled in DL courses. They told how students were sometimes sent abroad while enrolled in DL courses, or otherwise disrupted while they were in the middle of a DL class. They added that sometimes the rooms that the students normally used for VTC classes were occupied for other reasons. A senior lecturer who had been in the DL environment for more than eight years gave an example of a cultural problem that his students encountered in an Elluminate class:

> You would find somebody walks in to [the] office and says "You have got to do this right now." "But I am taking the class." You know, they were not separate in a classroom; you know some place, they were at the desk and that worked and even they put sign up "I am taking my graduate online graduate class live…I can not stop it and turn it back on again." And some of their co-workers and their bosses just ignored that.

Another senior lecturer with more than eight years of DL experience commented on a cultural problem that his students faced while they were taking VTC classes:

> I don't think the technology is the issue. I think there are a lot of other factors involved, like getting kicked out of your conference room and stuff like that.

A full professor who had taught more than 14 DL courses stated that availability of streaming video was another reason for the lower attendance rates:

> What I have seen increasingly in teaching in DL programs is, and I realize people have jobs and sometimes they have to travel and they have to do other things, but it seems as if there is significantly more people not attending class because they are traveling and doing things because they realize they can get the class via streaming video...So I think that there has to be very tight expectations set at the very beginning that is when you are involved in this program your supervisors, the people you work for, need to be making allowances for your attending classes and that they can't send you off on three weeks of travel when you are enrolled in this program…I think one of the reasons why that has occurred is because of the belief that rather streaming video is available, and I think the students think "well there is streaming video available and my boss wants me to do xy, and, ok, I will do it and not push back," and that's a significant problem.

An assistant professor who has used VTC technology for more than two years and a senior lecturer who has used both VTC and Elluminate said that the students at the remote sites feel more free to walk out of the class in the middle of class and carry on side conversations as they wish. Also, these two faculty stated that there was a technological way for students to step outside of class participation by muting their microphones. In this way, they could continue side conversations. The senior lecturer commented on the side conversations at the remote sites, which were a distraction:

> There is a lot of conversation that goes on amongst the students at a particular site. In some cases, that discussion is relevant to the class. In other cases, it is probably not relevant to the class. In some cases depending on the TV, the video camera, depending on which site it is on, you can see that there is talking going on. It is impossible to lip read because the picture is too grainy. Often times, most times, you are not really sure that that conversation is connected with being part of the classroom discussion. I think all the VTC instructors have seen that and experienced that.

Two of the faculty who had used both VTC and Elluminate also raised concerns about the accountability of the quizzes that they delivered to the DL students via Elluminate. A faculty member with more than five years of DL experience commented:

> In Elluminate you don't even have monitors…they are single sites they are solitary…so it is harder to give a real quiz. You can do it but it is harder.

b. Pedagogical Limitations

All the participating faculty shared their concerns about pedagogical limitations of both VTC and Elluminate.

Video teleconferencing: Twelve of the faculty members who used VTC raised concerns about the pedagogical limitations they encountered while they were teaching DL courses. Two of the faculty members stated that some of the students were not willing to participate in class discussions as they were somewhat intimidated by the technology; they knew that the other students were watching them on the camera so they tried to hide off camera. A senior lecturer with eight years of DL experience stated:

> Students don't like to speak up when they don't know who is listening, you know they know students are listening but they don't know who they are—it does not encourage openness.

All the faculty who used VTC technology agreed that the number of remote sites and number of the students at each remote site was the most important reason for the degradation in quality of the discussions. They stated that the more remote sites in a DL class, the more separation there was between the students. An assistant professor with three years of DL experience stated that once the students started talking across different groups, it could be very difficult to track the conversation. On the other hand, an assistant professor with two years of DL experience stated that the interaction level decreased when one site began talking because when one site started talking, the other sites had to have their microphones off, which made the interaction more difficult.

Three of the instructors who used VTC stated that it is ideal to have all the remote students at one site. They admit, though, that having all the Distance Learning students at one site is not realistic. These three instructors, together with four other instructors, pointed out that VTC works well when there are two or three sites and three to seven students at each site. They added that it was easier to know the DL students when there were no more than three remote sites. They also stated that once there were more than just one or two students at a remote site, students were more willing to speak up due to the diverse personalities, different backgrounds, and increasing familiarity with

each other. There were four instructors (See Table 1: Associate Prof. C, Senior Lecturer B, Senior Lecturer D and Senior Lecturer A) who stated that the ideal number for the remote sites should be 4-5.

An associate professor who used VTC technology said that knowing the students, knowing their names, and recognizing their voices was very important for an instructor. This professor added that whenever the number of remote sites exceeded three, he would be less interested in teaching DL courses:

> That is a pedagogical limitation. So you may have like a class activity that you want to do that is less than ideal if there is only one student at that site because they really need a buddy to talk to. Usually you can still make it work because they just work on their own and then they contribute when they can, but it is less than ideal. You would really want them to be working in a group.
>
> There is something magical about once you get past three sites where it isn't an arithmetic difference between three and four. It is almost algorithmic or geometric (laughs) and about the time you get up to seven or eight or nine…it just makes the interaction much more challenging because I felt distracted with it because you are switching site to site all the time. What is really hard for me to do in the DL environment is to get people to be interacting with each other and across sites.

There was only one assistant professor who had been in the DL environment for more than two years who stated that the ideal number of the remote sites depends on the students' willingness to participate in class. He stated that if students are unwilling to participate, then the number of remote sites is important. The larger number of sites makes it more difficult to generate discussion at each remote site. This assistant professor believed that everything else is the same except for the workload. He explained that:

> It probably only matters if they are a talkative bunch…If there are a lot of people who do ask questions in class. That of course if that is the case in a resident course it takes more time also, but discussion just takes a longer time and questions take a longer time in distance learning…So if I am teaching ten sites or two sites, it is basically the same amount of work with the exception of grading takes a long time.

Elluminate: Seven out of thirteen faculty who used Elluminate described the pedagogical limitations they faced while using this technology. Although, as indicated earlier, all Elluminate user faculty stated that Elluminate had some features that, in their opinions, made it more powerful than VTC (like availability of chat function, student polling etc.), five of the seven faculty stated that the biggest drawback they encountered in Elluminate was not being able to see the students. They stated that without having facial expressions and facial clues, discussion quality dropped. A participant with more than five years DL experience described discussion in Elluminate as "talking to radio," and stated that discussion in Elluminate suffered greatly compared to VTC.

Another senior lecturer with more than eight years of DL experience also commented on the number of students in Elluminate classes. He stated that since there was no visual contact with the students and they were not together in the same place, the number of students should be no more than 15. In that case, the instructor could effectively follow the chat conversations and discuss the subject matter with the students. An assistant professor who had taught Elluminate classes commented on the same issue and stated that the cap should be lower than resident classes. The same instructor also said that having DL classes with 50% more students than resident classes is unacceptable because this creates more workload and lowers discussion quality. Another senior lecturer who had taught more than 70 DL courses commented about student teaming in the Elluminate environment. He said that since the students were scattered far and wide, and had to do everything electronically, they did not get to know each other. This isolation made them unwilling to participate.

A senior lecturer with 11 years of DL experience also raised his concerns about not being able to see the students while using Elluminate. He described how he dealt with this disadvantage:

> …On the Elluminate side, for me, the biggest adjustment was not seeing students. So being able to teach and keep emotion up, as if people were in front of me so that my delivery is not flat and doesn't sound like a recording, even though I don't see any faces. What I would like to do is

> get visual photos of the students, and I have 2 screens, and put the students faces over here; they are just stills, but it helps me keep my emotion up and remember that I am talking to students just like I would be here only I can't see them.

All thirteen GSBPP faculty also talked about meeting their courses' goals and the material they covered in DL courses compared to resident courses in NPS. Interestingly, there was only one faculty member (an assistant professor who taught more discussion-oriented courses using VTC for three years) who provided a percentage below 90%. He stated that he could meet around 80-85% of his course's learning goals: "You have to have lower goals. The offer is 'adjust your goals.' Otherwise you are disappointed." He also stated that he covered about 75% of the course content in the DL environment. "You can basically knock out about between 25% of that. You definitely lose about a quarter. You just can't cover it…You lose a lot of the class content because of the way the discussion works."

There were three other instructors who stated they could cover less than 90% of course material. One of these instructors was a full professor who taught more discussion-oriented courses using VTC:

> I cover about 20% less material, maybe 25% less material in DL class compared to the face-to-face class. I really hadn't studied this or thought about it carefully enough to know what are really the specifics that cause 20-25% less time and I don't know if its because of things are just slower because of the interaction being slower. I don't have [a] good handle on that. But it is: I do cover 20-25% less material in DL class.

Another instructor was a lecturer who taught more discussion-oriented courses using both VTC and Elluminate:

> There is a loss [in DL courses]. The loss is both quantitative and qualitative. So then it is a matter of estimating the percentage loss, how much loss?...and that is tricky because part of that is subjective, but given example upon a VTC course I know that I am not going to be able to cover as much material…How much less?…[I cover] maybe 20% less [material].

The same instructor also commented on the loss in the material covered in Elluminate courses:

> Having only taught it [Elluminate] one time I don't know yet how [much] it [the material loss in Elluminate] is. I could [only] guess. But I do know that I could not cover as much material as quantitatively and because of there is no visual cues other than voice, other than audio,…again you lose…you actually can lose awareness as to [whether] anybody is even listening. You think they are...you ask them and they say "yeah we are here" but because you don't have any cues, any visual cues, other than just they can respond back or they can type in and show that they are there [with a] smiley face [figure] but without those cues it is a different context.

The last instructor who stated that he covered less than 90% of the material in DL courses was a senior lecturer who used both VTC and Elluminate for more than 8 years and taught more lecture-oriented courses: "I would guess that in a DL situation, on average you can get maybe 85% as much done as you could in a face-to-face situation." He was also one of the six faculty members who stated that they link discussion and lecture.(See Table 1).

D. ANALYSIS OF COMMON CONCERNS BASED ON THE LITERATURE AND THE DL SYSTEMS MODEL

In Chapter I, I introduced the DL model with four key areas (administration, instructor, technical support, and student), all of which are essential elements in creating effective DL programs. One key area is the instructors, and in Chapter II (literature review), I reported useful information from DL literature which shows the importance of understanding DL faculty concerns and challenges they face while they are teaching at a distance. This section will describe and analyze the common concerns of GSBPP faculty.

1. Reward Issues

As indicated in the literature review, one of the top concerns of DL faculty is reward issues (Howell, et al, 2004). Howell, et al. (2004) found that the most often stated argument for extra DL compensation was the extra work the faculty had to put into DL courses. According to the data gathered from the participating faculty, 84.6% of the

participants (11 out of 13) stated that there is a need for extra compensation. Of these 11 faculty members, only two stated that the current 50% DL premium was not enough when the extra workload was taken into account. These two faculty believed that the DL premium should be 100%. For example, an instructor teaching a three-hour DL class should receive six credits.

The remaining nine faculty seemed satisfied with the current compensation system. They stated that the current reward system provided enough of an incentive to compensate for DL instruction. Although they did not provide an exact number for the extra compensation, there were two instructors who stated that even 1.5 is more than needed to compensate for DL instruction. The numbers they provided seem to trend more toward 1 than 1.5. A senior lecturer who had taught in the DL environment for more than 8 years stated:

> It's 1.5 at present. You know, you could—I'm not sure—I think—again, there's been a lot of discussion about 1.5. I think 1.5 is reasonable. I'm not sure it's precisely the right number. The right number may be something less than 1.5, but I'm sure it's greater than 1.0.

The only faculty member, a senior lecturer, who said that DL is only 25% more work stated that faculty ought to get about 25% more compensation.

Apart from 11 faculty who thought that extra compensation was needed, 2 faculty members (a full professor and an associate professor both of whom taught more lecture-oriented courses) thought that there was no need for any extra compensation.

Although there is no study among the research reviewed in Chapter II that analyzes the compensation issues for the first-time DL instructors, all the 13 participants were asked if the DL faculty should receive extra compensation beyond the current 50% premium for the first several times they teach at a distance. While 46.1% of the participating faculty (six faculty members) stated that there was no reason for the first time faculty to get extra compensation, 53.9% of the faculty (eight faculty members) stated that the first-time DL faculty should receive additional compensation.

2. Workload and Extra Time Issues

Of the faculty, 92.3% (12 out of 13) believed that DL demands 50% more of the instructors' time, which is also indicated in the DL literature review.

Howell et al., (2004) stated that faculty members were concerned about the extra time demands required while learning to use effectively new instructional technologies. Likewise, all 12 GSBPP DL faculty members, while discussing the reasons for the extra workload, included the learning curve of DL technologies and/or teaching techniques as causes for the extra workload.

Kwok's (2007) study indicated that workload-related stress should be addressed to make DL more attractive to the faculty. According to the gathered data, 11 out of 13 faculty stated that DL created additional stress and they attributed increased workload as the most important cause for this stress. In another study, Conciecao-Runlee (2001) found that another reason for faculty stress is "a strong cognitive and affective effort" required throughout the delivery of DL instruction. These 11 BPP faculty members also included increased cognitive workload as a reason of workload related stress.

Lao & Gonzales (2005) reported that another faculty concern about increased DL workload is not having enough time to conduct academic research. Surprisingly, only one BPP faculty member, a full professor, mentioned that increased DL workload made it more difficult to conduct academic research, thus creating additional stress.

On the other hand, an assistant professor with three years of experience in DL stated that DL required less work than traditional face-to-face teaching in terms of preparation. However, not only the findings of this current research, but also the DL literature in general, confirm that most faculty believe that DL instruction requires extra time compared to residential instruction.

3. Technological Problems and Training and Technical Support

a. Technological Problems in VTC

There is literature that reports that the quality of equipment at both ends is important to provide smooth interaction between instructor and students as well as between students (Purdue, 2002). It was stated by 75% (9 out of 12) faculty who use VTC that the technology gap between the sites might affect the quality of discussion.

The literature also discussed network connection problems as another potential VTC disadvantage. These problems could cause cancellation of classes and disrupted lessons (Motamedi, 2001). Studies also have showed that poor audio and video signal quality might occur while using VTC (Motamedi, 2001), which also decreases the quality of education. According to the data, all the DL GSBPP faculty interviewed raised concerns about technology related problems like data rates, video-audio lag, poor quality of video and disrupted classes.

b. Technological Problems in Elluminate

According to the literature, one of the most important limitations of Elluminate is bandwidth. Quinn (2008) reported that limiting the number of participants in class and not using the video component solved the limited bandwidth problem in Elluminate. According to all GSBPP Elluminate users, limited bandwidth was also the main concern for these instructors. They stated that that was why they did not use the Elluminate video component. Furthermore, as will be discussed in the next sections, not using the video component caused some pedagogical problems.

Currently, there are no published studies that have discussed firewall settings and the difficulty of using videotapes as Elluminate limitations.

c. Technology Related Stress

According to the data, 11 out of 13 GSBPP faculty also stated that apart from workload issues, technological problems created stress while using VTC and

Elluminate. Quinn (2008) stated that these kinds of technical-technological problems (problems caused by insufficient bandwidth and VTC remote sites dropping off due to bridge problems) might turn a potentially enjoyable experience into a nightmare. On the other hand, all GSBPP faculty believed that all of these technology-related problems will not be an issue because of anticipated improvements in the current technology.

d. Training Issues

Eleven of thirteen faculty stated that they found training adequate. However, a full professor stated that he had not received training that would help him adapt his teaching skills and techniques to the VTC environment. Two assistant professors stated that they had no or little formal training in learning how to use the technology, which was essential for an instructor before he/she started teaching DL. The DL literature states that without hands-on training, teaching at a distance could mean sacrificing the quality of education (Lao & Gonzales, 2005). Moreover, the literature states that the students' willingness to participate in DL courses depends heavily on the instructors' level of expertise in using the DL environment effectively (Lao & Gonzales, 2005).

e. Technical Support

Twelve out of thirteen faculty found technical support more than adequate. They stated that DL staff was easy to work with and they would deal with the technical problems that had occurred during the classes. There was only one faculty, an assistant professor using Elluminate, who stated that there was a lack of support through Elluminate Corporation itself. As indicated in the literature review, when there is lack of technical support, the instructor is required to play the role of the technical expert when something goes wrong with the technology. Inadequate technical support might be a reason for interrupted or lost classes, just as the assistant professor stated that it would be.

4. Other Issues

a. Cultural Problems

During the interviews, all GSBPP faculty raised concerns about "cultural" problems they had encountered while using VTC and Elluminate. The common concerns were low student attendance rates, low attendance caused by administrative problems at the remote sites, side conversations at the remote sites that are unrelated to the class topic, and student accountability during quizzes. Although the DL literature provided no findings about these types of concerns, they are still important and handling them is an essential issue that affects the quality of DL education and faculty satisfaction in teaching DL classes.

b. Pedagogical Limitations

All faculty raised concerns about DL technologies' pedagogical limitations. They stated that the DL environment lacks the convenience of the traditional face-to-face environment, and this sometimes forces them to deliver the course in a more structured way than they would usually do. Rogers et al. (2003) also found that faculty had difficulty making last-minute changes in course content, and this resulted in changing the format of the delivery to more structured lectures instead of the discussion format the instructor most preferred.

VTC: Twelve faculty who used VTC technology raised concerns about the pedagogical limitations they had faced. Seven of these instructors stated that this technology works well when there are two to three sites and three to seven students at each site. Also, the DL literature states that thanks to interactivity and continuous feedback, which are important elements in DL, one instructor can interface effectively with only a limited number of students in one session (Motamedi, 2001).

These 12 faculty members stated that they met 95% of the same learning goals of their VTC courses compared to face-to-face instruction and 90.4% of the material. When this data is analyzed in detail, we can clearly see that instructors who

taught discussion-oriented courses reported being able to meet 90% or less of their residential class course goals. This percentage is lower than their peers who taught more lecture-oriented courses.

Elluminate: As stated earlier, all seven faculty members stated that the biggest disadvantage of Elluminate was not being able to see students. Faculty believed that lack of facial expressions and facial clues was one of the reasons for the degradation in discussion quality in Elluminate.

On the other hand, the overall advantages of Elluminate seem to outweigh those of VTC when the comments of the seven VTC and Elluminate user faculty are explored in detail. Findings show that the more the faculty teach in the DL environment using Elluminate, the more they like the medium and the more they become comfortable with the technology. According to the faculty, Elluminate is more like a teaching tool and it has computer-based tools that make it more advantageous than VTC technology. An associate professor who taught more lecture-oriented courses in the DL environment for more than 12 years commented:

> You really don't have, I think, a VTC system that was optimized for teaching. Video, teleconferencing was principally for just having meetings. So, I don't really think [that] it's optimized from a pedagogical standpoint. With Elluminate, it's designed as a teaching tool, so I think it has some advantages [over VTC].

All seven faculty members believed they could meet the same learning goals in their Elluminate classes compared to their face-to-face classes—a 99% overlap. In addition, the Elluminate faculty believed that for the most part they could cover nearly the same amount of material (93.5%) compared to their face-to-face classes.

It is clear that all these various systems factors, when combined, had some negative impacts on DL faculty. A problem in one aspect of the DL environment creates another problem that multiplies instructor stress and dissatisfaction, which can increase instructors' unwillingness to teach in this environment. For example, lack of visual cues in Elluminate classes, which is a pedagogical limitation, is caused by bandwidth

problems, which is a technological problem. These problems could result in less material coverage and meeting fewer course goals, especially for the instructors who had taught more discussion-oriented courses in the DL environment. According to the data, the number of remote sites had an inverse relation with faculty willingness to teach in the DL environment. The more remote sites an instructor has in his/her DL class, particularly a VTC class, the more unwilling he/she becomes to go on teaching DL. On the other hand, during the interviews all faculty stated that the VTC technology had undergone enormous improvements since it was first introduced. As indicated earlier, faculty believed that improvements in the technology will remove current concerns they encountered in the DL environment.

The next chapter discusses conclusions that can be drawn from the data. It also provides recommendations and suggests further research that needs to be conducted to better understand the impact of DL on GSBPP faculty.

V. CONCLUSIONS AND RECOMMENDATIONS

A. SUMMARY AND CONCLUSIONS

Useful comments and advice, regarding perceptions and survival techniques that help in the DL environment, were gathered through interviews and feedback from instructors experienced in both traditional university teaching and distance learning courses. In my study, I designated two primary and two secondary research questions that served as the primary focus.

The primary research questions, and supporting secondary research questions, were designed to understand the perceptions of faculty about teaching in a synchronous DL environment using Elluminate and VTC as delivery media, and to compare the quality of discussion in each platform. After conducting a detailed literature review, I prepared questions to be asked in the interviews. Next, two pilot interviews were conducted to test the clarity and sequence of questions as well as to gauge the effectiveness of the interview techniques. The rest of the interviews with GSBPP faculty were modeled after these two pilot interviews.

I gathered information from thirteen GSBPP faculty to find answers to the research questions. These faculty represented a cross section of GSBPP DL instructors including both tenure track and lecturers. All the interviews, which lasted between 30-45 minutes, were taped and transcribed. My efforts focused mainly on gathering data about the perceived challenges of GSBPP faculty who teach at a distance using the VTC and Elluminate platforms. The researchers referenced, and the data collected, indicate that experienced instructors have specific difficulties while they are teaching at a distance.

My primary research question was “What are the perceptions of faculty about teaching in a synchronous DL environment using Elluminate and VTC as delivery media?” Findings of this study show that teaching in the DL environment is work intensive and this workload creates stress on faculty. Since teaching at a distance requires intensive planning and development, the instructor needs more time to prepare for a DL

course. There is also cognitive workload during the delivery of the course. The instructor is involved in a cognitive effort in order to stay engaged in conversations, keep the class focused, manage technology, and pursue a comprehensive and coherent discussion. There is also added work after the delivery of the course. Since the DL environment lacks the convenience of the traditional face-to-face environment, the instructor has to answer all the questions received via email; this creates heavy email load. There is also a tendency to word a written reply more carefully than a spoken one, which takes more time and effort. Furthermore, some discussions cannot be held via email at all, so the instructor has to spend some time on the phone answering his/her students' questions. Grading also requires more of an instructor's time. All this added workload, along with technological problems, creates stress on the faculty.

This study and literature review support the view that extra compensation is needed to reflect the extra workload. This extra compensation is also another important incentive to encourage participation. According to this study's findings, the extra compensation should be more than the credit given for residential classes, but not more than 1.5 times the credit. On the other hand, the current compensation system, which is in effect in GSBPP, is fair enough for the first few times a faculty member teaches at a distance. In other words, there is no need for compensation beyond 1.5 credits for the first several times that a faculty member teaches at a distance.

This study also shows that faculty can encounter technological problems during a DL course. The reason for the technological problems might be natural (windstorm, thunder, etc.) or the technology itself (bandwidth issues, bridge issues). However, according to most of the GSBPP faculty, the technical support, along with the training, for overcoming these kinds of problems and helping the instructors is generally sufficient. Finally, faculty members agree that the technology will improve and remove these problems in the near future. The study's data also indicated that the remote sites' technology is another variable to be considered to help ensure the quality and effectiveness of the discussion in VTC courses. There should be a standard for the remote sites' equipment that meets the baseline requirements, designated by NPS, for effective interaction.

Study findings and the DL literature show that there are pedagogical problems to be addressed while teaching at a distance. All GSBPP DL faculty interviewed and the DL literature state that the DL environment lacks the convenience of the traditional teaching-learning environment, especially in terms of ease of last-minute instructional changes and convenience of interaction with students. Moreover, in VTC classes the number of remote sites and number of students at each remote site are important variables for effective interaction. According to the GSBPP DL faculty, as the number of remote sites increases and/or class size at each site dips below three students, the interaction becomes less effective. VTC works best when there are no more than three or four remote sites and five to seven students at each remote site. Also, not being able to see the students in Elluminate classes creates another pedagogical problem and decreases the effectiveness of interaction. Although Elluminate provides this function, the bandwidth issues restrict its use in the DL classes.

Cultural problems are also another common area of concern for the GSBPP DL faculty. The study's results show that the instructors are concerned about low attendance rates resulting from either the availability of the recorded version of the DL class or non-supportive attitudes of students' superior officers. Accountability of the quizzes is another area of concern, especially in Elluminate classes where students are isolated from each other.

In addition to these common concerns, the findings indicate there is need for new teaching techniques and skills while teaching DL courses. Adopting the same teaching techniques from the face-to-face teaching-learning environment is not enough for effective interaction in the DL environment. In the DL environment, the role of the instructor has to be more of a guide than a source of knowledge. Another result from this study is that having students in DL classes with significant work experience is an important variable in determining the instructors' level of satisfaction from the courses. The contributions of these students and their instant feedback on the class topics increase the instructors' level of satisfaction and willingness to teach in the DL environment.

B. RECOMMENDATIONS

My secondary question was "What strategies should the GSBPP administration and faculty follow to relieve faculty concerns and ensure DL program success based on faculty criteria of instructional effectiveness?" Although faculty recognize that it may require a lot of time initially to plan and prepare for the course and teach at a distance, it can also be satisfying to teach in this environment. In order to create a safe learning environment in which the students are able to find opportunities to learn, instructors:

- Must have the ability to make the transition from the traditional teaching-learning environment to the DL environment
- Develop the attitude that distance education is valuable
- Maintain the open-mindedness toward the capabilities and limitations of this environment
- Know how to reach and motivate students in this environment

Since facilitating in a DL environment requires a different approach than in a face-to-face teaching environment, new teaching techniques and skills need to be introduced to the GSBPP faculty to make the experience meaningful to the students. That is why GSBPP administration:

- Should provide continuous faculty training programs and support
- Have the personnel providing support stay in close contact with faculty and conduct the training with faculty members' own equipment to relieve the problems they might encounter while using their own equipment

I would also recommend that GSBPP administration take the following actions to relieve faculty concerns and improve DL effectiveness:

- Recognize DL instructors' need for release time—given the amount of preparation required to prepare and teach a DL course—and therefore review faculty workload and compensation for DL teaching
- Restrict the number of remote sites in VTC classes and the number of DL students in Elluminate classes, both of which have a direct impact on faculty workload and interaction effectiveness
- Have DL instructors visit remote sites and meet with the DL students and/or have DL students visit NPS before or during the quarter, as far as budget constraints allow

In summary, instead of arguing if DL environment is better or worse in quality compared to the traditional face-to-face teaching environment, faculty must focus on their approach to teaching, and how they could take advantage of different technological components to make learning meaningful for students. Also, the institution:

- Must embrace DL as a growing reality
- Must reward DL more than traditional instruction
- Should rotate all faculty members through applicable DL instructional modes
- Must understand what changes and improvements need to be made by listening to what faculty members and DL students say about their DL experiences

C. FURTHER ACTION/RESEARCH

Although this study was limited to 13 GSBPP faculty members, the interviews can be expanded to a larger community of DL instructors to determine a more accurate assessment of these experiences, perceptions and attitudes about teaching at a distance. There is also need for expanding the qualitative interviews to the other three elements of the DL model (administration, students and technical staff). Understanding their concerns and the challenges they face in the DL environment is a valuable opportunity to increase the effectiveness of synchronous DL courses.

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